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STEEL

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For forty-eight years—IRON TRADE REVIEW

OCT 25 1932

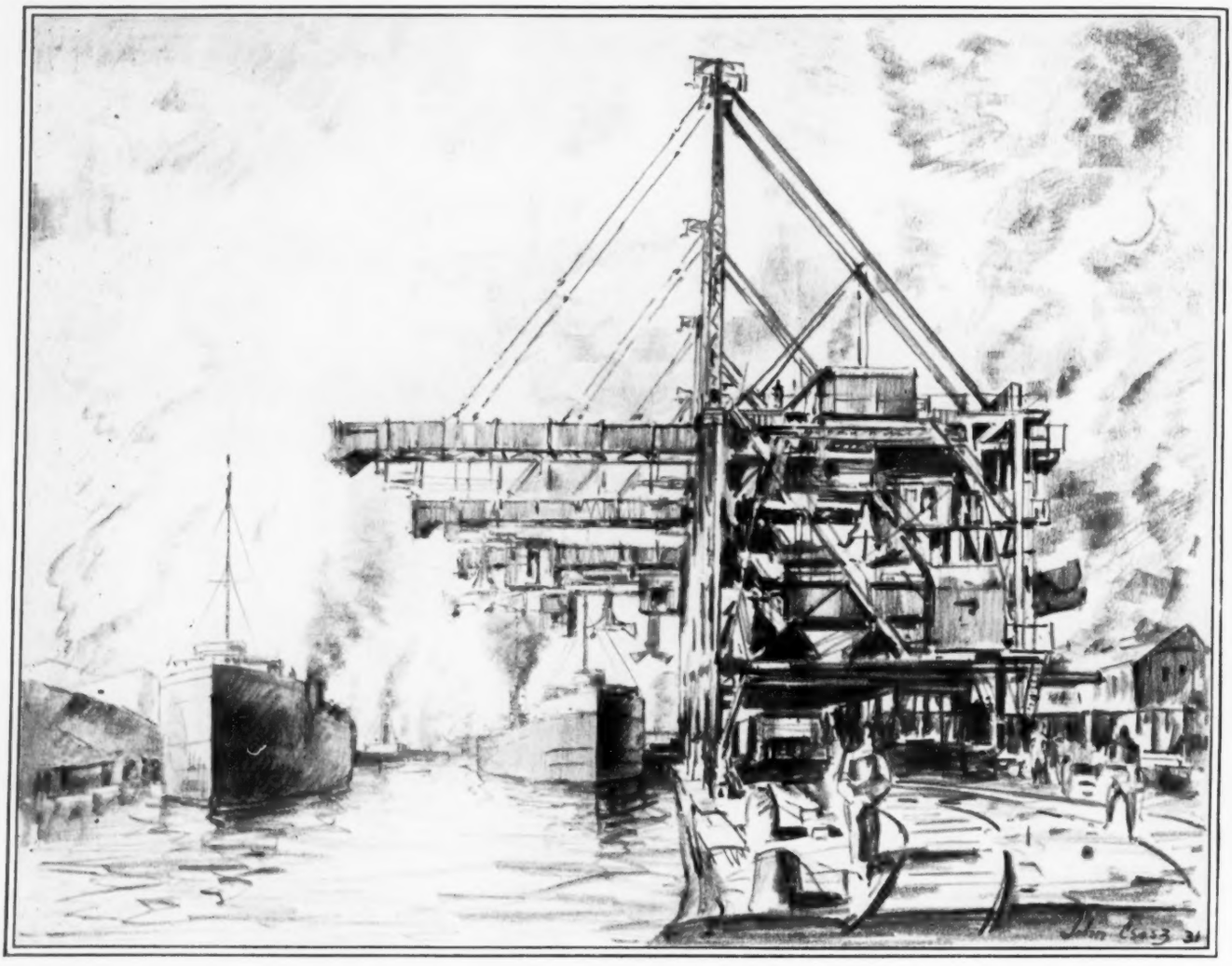
"Steel looms large in the vast panorama of human activity"

CARNEGIE STEEL COMPANY · PITTSBURGH

Subsidiary of United States Steel Corporation

October 24, 1932

THE MEETING PLACE OF IRON



UNTIL the later decades of the nineteenth century the manufacture of iron was limited by the location of the ores. Quantities were so small that transportation presented no problem. ' ' ' The age of boundless quantity ushered in by improved processes and the immense stores of high grade iron ore in the Lake Superior district changed this. ' ' ' Cheap transportation by water, fuel and limestone supplies and the proximity of vast and ever increasing markets made the lower lakes districts a meeting place for the materials which go to make iron and steel. ' ' ' Competent rail facilities and efficient shipping docks take the ore from the mines and put it into ships. Unloading devices of almost human skill take it from the ships for the use of furnaces. ' ' ' Ingots of gold or piles of precious stones would not make the contribution to the comfort and happiness of the people made by the supplies of ore and fuel which meet at the iron furnaces and pass on to the foundries and factories of the great middle west.

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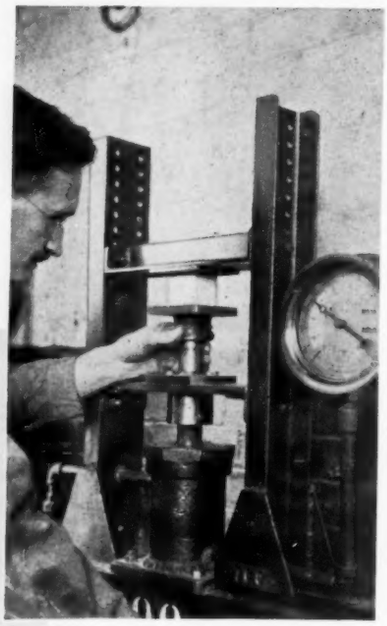
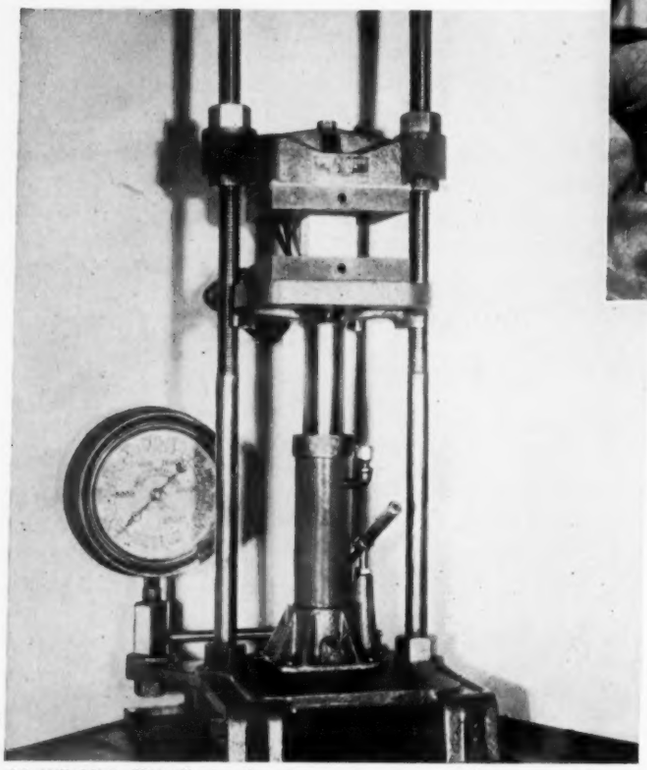
ONE GOOD TEST



THIS 2" CUBE *of Armstrong's Insulating Brick stood a pressure of more than 450 pounds!*



ANOTHER TEST, *in the Armstrong research laboratory, showed equally high crushing strength.*

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High Temperature Insulation for Industrial Furnaces

Volume 91 Number 17

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

PROUD as the owner of an automobile may be, his title to it is insecure and his possession fleeting, for the shadow of the open hearth is always upon it. A product of the blast furnace and steel mill, the automobile enjoys a brief span—six years, on the average—then returns as scrap for melting and perhaps reincarnation. At this time, as Detroit is beginning to assemble new models and is discussing (p. 19) the low-hung Buick, teardrop Plymouth six, dual line of Chevrolets and a probable change by Ford, it is reminded that what comes off the assembly line must return to the disassembly department. Since early 1930, Ford alone has scrapped over 72,000 derelicts; the president of Packard estimates 2,000,000 cars, 500,000 more than new production, are being removed from service this year.

Path of Glory Leads but to the Scrap Heap

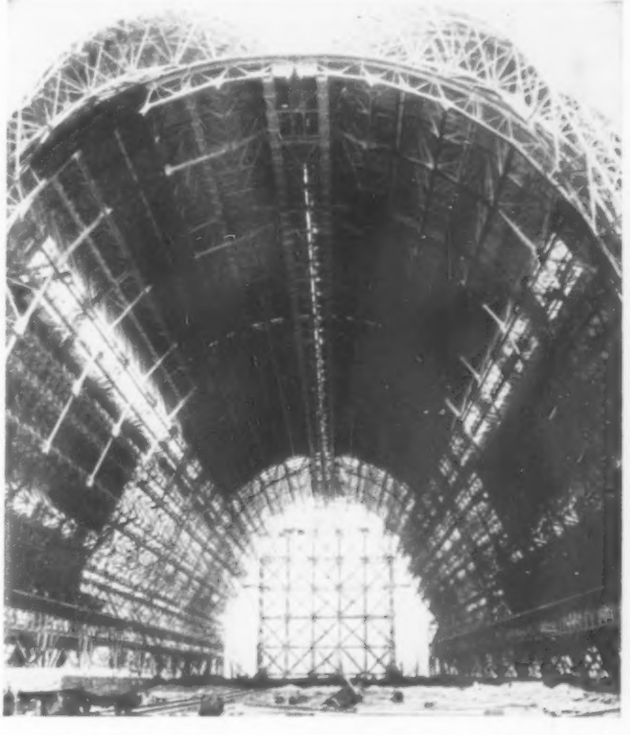
Two hundred wrecks in eight hours, each yielding half its weight in steel scrap in the shape of 1000-pound bundles from the maw of a 1000-ton hydraulic press (p. 23), is the capacity of the Ford disassembly line. . . . Of scrap like this, the head of the Scrap institute estimates (p. 18) a 60-day supply for a 25 per cent steelmaking rate is on dealers' yards, its value up $2,000,000 because of the recent bulge in prices . . . . There is complaint (p. 18) in the East that Japanese, Dutch and Indian pig iron are being offered so cheaply the market for low-grade blast-furnace scrap is being narrowed alarmingly. . . . To the scrap heap the two idle stacks of the Youngstown Sheet & Tube Co. at Mayville, Wis., have been consigned (p. 12).

Rail Mills Bet $3,500,000 on Recovery

Including the Wharton stacks of Bethlehem, also sold for scrap, four potential pig iron producers with an aggregate annual capacity of 625,000 tons have been jettisoned in two months, an elimination of excess capacity which may speed the recovery which is more noticeable (p. 45) after a slight faltering. . . . Steelmaking operations, which held at 19½ per cent last week (p. 53), may cross 20 this week. . . . Reducing the price of rails $3 per ton to $40, first change in a decade (p. 49), is not expected to conjure up a million tons magically, but represents a gesture by producers to remove an obstacle to customary year-end commitments. On the basis of the 1931 rail tonnage, this is a $3,500,000 gesture.

Year's Delay Saves $600,000 on Bridge

Structural steel makes a notable contribution to this invigorated market situation, the formal award of 75,000 tons for the Golden Gate bridge at San Francisco putting the week's



Acme Photo

In this steel nest at Sunnyvale, Calif., much like the one at Akron, O., the navy's dirigibles will be cradled on their trips to the Pacific coast

lettings (p. 50) up to 90,263 tons, a record for 1932. New bids on 28,000 tons of steel cable and 9700 tons of shapes for approaches disclose a saving of $600,000 from the tenders of June, 1931. . . . Most markets on the Pacific coast (p. 59) are more active, and a bar mill (p. 15) at Emeryville, Calif., long idle, has resumed.

Independent Fabricator Has Place in Sun

No group in the steel industry is more alert to improving its position than structural fabricators. Meeting at Pittsburgh, the American Institute of Steel Construction (p. 11) sounded a call to put an end to senseless, uneconomic competition, made fresh assurances the place of the independent fabricator is secure, took courage from the broader market that is developing. . . . Shapes, duty paid and delivered at $20 to $22 at New York, from European mills make the $4 duty merely a tax on the importer, fabricators declared (p. 15) at a dumping hearing at Washington. . . . To preserve the crumbling masonry tower of the Old South church at Boston (p. 36), a steel tower to which the exterior walls will be fastened is serving history.

Europe Progresses, as U. S. Imports Show

Europe also participates in the improved market outlook, a resume (p. 13) of developments in the third quarter putting constructive factors in the majority. The full effects of the reparations settlement and the new British trade agreements are yet to be felt, but the tendency is toward firmer prices and an expansion of trade. . . . American imports and exports of iron and steel each jumped about 4000 tons in September (p. 16), imports going to 29,241 tons and exports to 36,038. . . . Stating imports in terms of unemployment, a fabricator claims (p. 11) imports of shapes in the first half of 1932 cost 120,000 American workmen a week's work, while at the dumping hearing at Washington it was said (p. 15) that all imports in 1932 were equaling 17,788,596 man-hours.

Research Thrives on Depression

Seeking employment for idle capacity, industry is turning to research (p. 20). In appraising any comeback in industry, new products must be considered, and the aggregate of individually-small new outlets may prove impressive. . . . Because of increased use of rolled zinc and zinc die castings, a producer of this metal has greatly amplified its research activities (p. 38) to determine the simplest and most economical method for plating them. . . . Nine fields of industrial gas utilization are being explored (p. 36) by the research committee of the American Gas association. . . . Experience, not research, has developed two procedures (p. 29) for increasing the resistance of open-hearth furnace bottoms. . . . A new low-melting point alloy of bismuth, lead, tin and cadmium, known as "bendalloy," has been developed (p. 38) for use as a filler material in making complex bends in metal tubes. . . . Basic open-hearth steel containing 3 per cent chromium has been found (p. 40) highly suitable for rails on account of its wear-resisting qualities.

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

To the Editor:

Can all the men now unemployed be re-employed under the present old system even if we are operating at the exaggerated rate of 1928-29? Can we as a whole, be prosperous as long as even one or two million men and women willing to work, are unable to obtain work? Can wages and salaries be even kept at the present level as a whole, as long as there is this competition for jobs due to the millions out of work? Can prices consistently be advanced as long as wages and salaries continue to decline? Can demand for commodities, etc. consistently increase with decreasing employment through mechanization? Can commodities be sold at the present low level of operation and prices and return any reasonable profit on legitimate and actual investment?

Is not the answer to the above six questions decidedly "No" from the standpoint of a banker, an executive, an employer, an employe, a Republican, a Democrat, Socialist or Communist?

Can anything be done to reverse these conditions? Can all now out of work be put back to work, with labor-saving devices continually reducing jobs?

The only answer to these questions is "NO," without a revolution in our entire method of living. Suppose, however, we tried something which has already been done on a limited scale.

Cannot daily and weekly (preferably the former, permanently) hours of labor be continually reduced so that not only all now unemployed will be re-employed, but a very slight shortage of men and women available for jobs may be maintained no matter how rapidly labor saving machines are installed.

Will not this competition for jobs for employes rather than employes for jobs raise wages exactly as the reverse must reduce them, so that the daily wage at shorter hours will gradually equal or exceed the present falling wages or salaries?

Will not re-employment and assured employment increase the entire moral and spending urge of the whole nation?

If prices are not increased much above their present rates except in the case of the farmer and a few others, cannot a good reasonable rate of return on actual invested capital be made due to the enormous value of demand made by the steady employment of everyone at steadily increasing wages, at steadily decreasing hours of employment, due to continued employment, economics and combinations?

Will not, under such economic setup, expansion and development come through earnings and savings rather than mortgaging the future?

E. L. M.

Pennsylvania.

Structural Steel Industry Girds for Reconstruction

FIRED with grim determination to fight the battle against the depression through to a successful conclusion, nearly a hundred structural steel fabricators and representatives of structural mills met on Oct. 20 and 21 at the Schenley hotel, Pittsburgh, for the tenth annual meeting of the American Institute of Steel Construction. Discussion in the abbreviated two-day convention was confined almost exclusively to internal problems of the structural steel fabricating industry.

Hits Evils of Ruthless Competition

In his annual address as president of the institute for the fourth consecutive year, Charles N. Fitts, New England Structural Co., Boston, struck at the "narrow policy of legislators who enact laws to guarantee the freedom of competition, but offer no assistance to those who are forced into bankruptcy because of ruthless competition."

He quoted a brief filed by the department of justice in a Virginia case touching on the legal functions of trade associations, and from this authority asserted that the American Institute of Steel Construction "can collect and disseminate statistics on shipments, bookings, orders on hand and the prices which we get for our work, and exchange information in regard to what it costs us to purchase steel and fabricate it. We are at liberty to collect information on credits, terms of payment, etc. . . . We have no right to enter into agreements as to prices we will quote on projects for which contracts have not been signed. . . ."

Mr. Fitts declared the institute always has lived up to the letter and the spirit of the law and stated that its errors, if any, have been "in the opposite direction; we have not attempted to avail ourselves of those activities conceded our right to improve internal relations."

In this connection he reported that the action taken at last year's convention in asking the directors to put into effect a plan designed to rationalize the volume of business in the structural industry still is in the hands of a committee, and although a solution has not yet been found, the industry should not grow impatient.

"We should be able to depend upon a dissemination of more accurate facts for remedying many of our problems," he said. "Should we fail in that, then we should look to some means of compulsion."

Benefit by Example of Mills

Referring to the steel industry at large, he declared that "the mills have given us a valuable object lesson in co-operation and have announced their faith in their ability to solve their important problems by reorganizing the American Iron and Steel institute. Whatever of good results from that step will not be for the exclusive benefit of the hot steel industry. The American Institute of Steel Construction should be prepared to co-operate and to make sure of equal benefits to this branch of the cold steel industry."

In presenting his annual report as executive director, Charles F. Abbott made a stirring appeal for co-operation among fabricators and between fabricators and the mills.

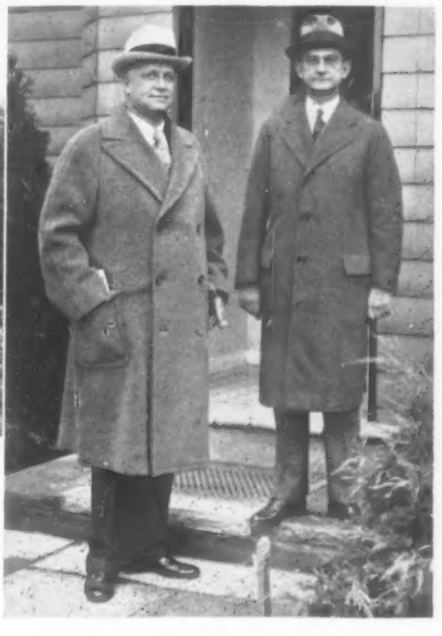
"The sole aim of a successful busi-

Translates Dumping Into Terms of Unemployment

IMPORTS of foreign steel into the United States during the first six months of 1932 deprived American workers of employment totaling one week's work for 120,000 men, according to J. W. Thomsen, Stupp Bros. Bridge & Iron Co., St. Louis.

Declaring that the steel industry may meet with some success in its effort to prevent importation of steel through violation of the statutes against dumping, he urged steel constructors to consider whether the use of imported shapes is not detrimental to their own welfare.

Return of normal employment, he maintained, is necessary if the industry is to enjoy a reasonable demand for its product.



THIS first frameless steel house, erected at Solon, O., near Cleveland, was formally dedicated Oct. 12—a date which its sponsors are confident will also mark the discovery of a popular new type of residence. The floors and walls constitute the frame, the wall sections being assembled in the shop and welded on the site, and the floors being sheet steel Z-sections welded to form a series of boxes. The American Rolling Mill Co., Middletown, O., co-operated with Insulated Steel Inc., Cleveland, in constructing the house. Bennett Chapple, vice president, and Charles R. Hook, president, of the Rolling Mill company, are shown in the doorway of the house, Mr. Hook being on the right

ness is to make a net profit and not to obtain a volume of sales," he declared. "Our antiquated antitrust laws prevent group action to stabilize either prices or profits, but they undoubtedly will be clarified or modified to bring them into harmony with modern conditions.

"But there is no mystery when it comes to improving either prices or profits. There is no power of compulsion available to enforce illegal agreements. There is nothing that can be done except education and direct appeals for justice and fairness."

Price Problem No Worse

Mr. Abbott declared that prices were as bad in 1929—a 4,000,000-ton year—as in 1932, when the tonnage will not exceed 800,000 tons. Moreover, of this 800,000 tons, that going to the mill fabricators will not exceed 46 per cent. "Perhaps the fabrication-in-transit problem is largely responsible for some of our trouble," he volunteered.

The executive director stressed the importance of new markets for structural steel. Investment of a small amount in expanding what the institute already has done in developing new uses would, in his opinion, bring substantial returns.

"On the other hand," he warned, "hesitation to make proper provision for funds to be used for market development merely postpones the action that ultimately must in some way be provided if the industry is to advance."

The greatest need, he asserted, is exploitation of potential markets, with free play for new ideas and new enthusiasm.

Lee H. Miller, chief engineer of the institute, made the point that structural steel is marketed through the co-operative function of the architect, engineer, fabricator and mills, subject to local legal restrictions. No other steel markets, excepting perhaps that of boilers and pressure vessels, are subject to such restrictions.

All potential markets for new uses of steel such as floors, residences, road guards, load carrying piling, curbs, etc., must be approached through engineering and architectural contacts with state, municipal or other local authority. Therefore, development of new markets will depend upon the services of local fabricating units equipped with materials and personnel to deal with conditions as they are evolved.

Mr. Miller called attention to the gigantic subsidies granted automobile trucking companies through highways, bridges, etc., designed for heavy truck traffic but which are paid for largely by gasoline taxes from passenger car owners. The railroads, through their heavy taxes, also bear much of this cost, which benefits their competitors. The subject is of direct interest to fabricators because railroads are good customers of the steel industry and because grade separation projects and highway bridges are involved.

Urges Untangling Bridge Data

The speaker reviewed the confusion existing in bridge specifications and declared the institute should undertake the task of establishing a uniform regulation incorporating live load definitions that could become the basis for highway traffic regulations. He also spoke of the grade elimination problem, declaring that elimination of 240,000 existing crossings would involve (at 100 tons per unit) sufficient fabricated steel to keep the industry at capacity operation for six years.

Mr. Miller also cited opportunities for steel consumption in residences, load-carrying piles, steel curbing and highway guards.

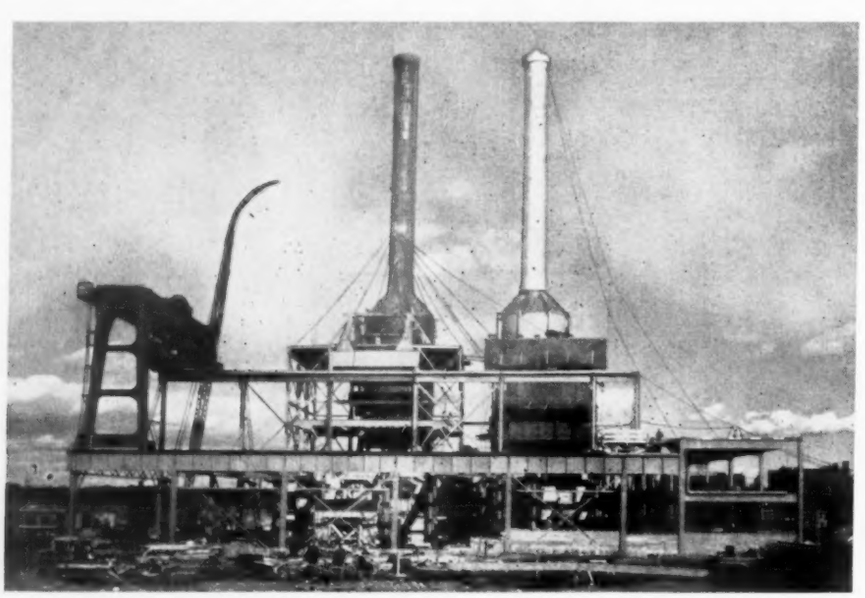
Voicing an opinion that probably represents the sentiment of the majority of thinking executives in the structural industry, W. M. Wood, Mississippi Valley Structural Steel

(*Please turn to page* 35)

Institute May Take Over Structural Statistics

IN PRESENTING his report as chairman of the committee on statistics, Clyde MacCormack, Phoenix Bridge Co., Phoenixville, Pa., revealed that the United States department of commerce in the interest of government economy has asked the American Institute of Steel Construction to take over the work of collecting and distributing statistics pertaining to the structural steel industry.

The department has been issuing weekly and monthly reports of orders for fabricated structural steel. Mr. MacCormack's committee recommends that the institute take over this function, although it is likely the weekly statistics will be dropped, as they cover too short a period to be of great value.



UP GO THE STACKS: General Electric Co. is pushing vigorously the construction of its outdoor mercury-steam-electric power station at Schenectady, N. Y. The station, costing $4,000,000, is a development of General Electric engineers, and will be ready by spring. The work is being pushed to assist general business and including a tunnel will represent the labor of more than 1000 men for 120 days. Materials utilized include 2650 tons of apparatus not including mercury-vapor equipment, 2200 tons of structural steel, 885 tons of reinforcing bars, and 550 tons of piping

Scrap Institute Invites Consumers to Join

Directors of the Institute of Scrap Iron and Steel Inc., New York, of which Benjamin H. Schwartz is director-general, at a meeting at Youngstown, O., Oct. 19, decided to invite steel mills and foundries to become associate members, to promote closer co-operation with the scrap industry. The institute will also limit its efforts to the markets east of the Mississippi river and north of the Mason and Dixon line.

Mayville Stacks Doomed

Iron & Steel Products Inc., Railway Exchange building, Chicago, has purchased for dismantling the two blast furnace stacks and auxiliary equipment of the Youngstown Sheet & Tube Co., at Mayville, Wis. The plant has not been operated for five years.

Europe Sees Gain in Steel Situation; Prospects Improve

BY VINCENT DELPORT
European Manager, STEEL

TWO important events happened in the third quarter which eventually must influence world economic conditions—the reparations settlement with Germany and the Ottawa conference.

Apart from the direct effect upon the countries to which reparations were due, the reparations settlement removes one of the major unfavorable factors responsible for artificial trade conditions. The full benefit of this settlement to the world at large will not be felt, however, until some arrangement, acceptable to all parties, has been made with respect to remaining debts between nations.

In any case, a time factor must be taken into consideration before the economic world can properly react to such settlements; but there can be immediate result in the removal of the strong element of uncertainty which these problems create in world trade. So long as this uncertainty remains, the essential psychological factor, confidence, will not definitely come into play.

It will also be some time before results of the Ottawa conference can be fully felt. Undoubtedly, when the Ottawa agreements become effective, after having been passed by parliament, trade between the United Kingdom and other parts of the British Empire should develop.

May Make New Treaties

Furthermore, Great Britain will be in a position to discuss fresh commercial agreements with countries outside the Empire. A definite lead is being given, and it may be assumed that, eventually, trade relations between the countries of the world will become more active, while some important modifications may be expected in the various trade currents.

Already, and definitely, a better feeling of confidence in the future can be detected in the principal European nations. There are signs that the worst of the depression is over and a slight expansion in certain trade sections, including iron and steel, is apparent. Unfortunately, while there is some improvement in economic conditions, the international political situation lately has become clouded, and this, of course, reacts unfavorably on the growth of confidence.

In the iron and steel industry, following the rise in the price of primary products which has been pretty general of late, there has been some expansion of trade and a firmer tendency. Steel production, however, still is well below the level of a year ago, and the accompanying table, relating to the principal producing-countries, shows to what extent output has been reduced since the beginning of this year.

European Picture Brighter

IN THE accompanying survey of business conditions in Great Britain and the Continent STEEL's *European manager finds much to indicate the turning point has been passed, though problems remain to be solved and results of recent events are not clearly outlined. Compared with previous reviews, this statement shows a basic betterment in conditions.*

The countries chosen are the five countries that were the original members of the European steel entente, and Great Britain. It will be seen that the production of steel during the first eight months decreased 23 per cent from a year ago. Comparing the last month for which figures are available, the combined output of the six countries in August was still 23.8 per cent less than in August, 1931.

Germany was already in the throes of the depression a year ago, and the table shows that the position has further deteriorated. France maintained a comparatively high level of production in 1931, but has suffered a considerable decline this year. Great Britain, on the other hand, was experiencing the worst of her depression in 1931, and a slight improvement can be seen for this year.

The other countries, which have a smaller output, have also suffered serious reductions in steel production since the beginning of 1932. Generally speaking, the position toward the end of the summer showed little sign of improvement, as indicated by the figures for August.

In view of the expanding activities in the various markets since September, it can be expected that production figures for the last quarter will be somewhat higher than in the last three months of 1931. Foreign trade figures up to the end of August did not show much expansion for iron and steel, but the latest reports reflect a little more activity.

Prices Touch Lowest Point

Steel export prices reached probably their lowest point in history toward the middle of August, when Continental merchant bars in basic steel were quoted as low as £2 3s, gold, or $10.40 per ton, f.o.b. Antwerp; in fact, it was reported that sales had been effected at £2 1s, or about $10. Two-inch billets at that time reached the low level of £1 18s, or $9.20, which was barely higher than that for foundry pig iron.

It is not only the low level that is remarkable, but also the abnormally low margin between the prices of products in different stages of manufacture. At the end of September, prices had hardened markedly, and billets brought about £2, or $9.70, per ton, while merchant bars rose to £2 8s 6d, or $11.75. Other commodities generally followed the trend.

It is recognized that most works offering steel products at such prices cannot make any profit and often take orders at a loss. In some cases this loss is compensated by profits on the sales of by-products, principally gas and power to corporations. It is felt, however, that this process cannot continue for any long period.

The steel entente has been powerless to prevent this downfall of prices; in fact, for some months it has existed only in name, and each member-country having reduced its

Steel Production, Six Leading European Countries

(Metric tons, 000 omitted)

	First eight months			August		
	1932	1931	Per cent	1932	1931	Per cent
Germany	3,781	6,111	—38.2	416	690	—39.7
France	3,703	5,455	—32.2	473	644	—26.5
Great Britain	3,538	3,491	2.7	367	363	1.1
Belgium	1,863	2,084	—10.5	222	290	—23.5
Luxemburg	1,266	1,369	— 7.5	167	175	— 7.5
Saar	942	1,086	—13.2	100	119	—16
TOTAL	15,093	19,596	—23	1,745	2,281	—23.6

output of its own accord, the entente did not even continue to fix production quotas. All efforts to make the entente more effective had failed early in the summer; principally, it is said, on account of the insistance of one large Belgian group to be allotted a quota which the other concerns were not prepared to concede. It was also found impossible to agree on a scheme for the organization of export trade, providing minimum prices and export quotas. Therefore, during the summer months the question was left in abeyance and competition was unrestricted.

Prognostics as to the future of the entente are difficult to make. The Belgians do not seem to have agreed upon a common policy. German producers are anxious to see the organization of an international export syndicate, but German merchant firms and consumers are suspicious of any policy which calls for fixing of minimum prices. On the other hand, it seems to be agreed that definite cooperation between the steel-producing countries is necessary to prevent recurrence of disastrous price-cutting and over-production, and that some measure of discipline is essential.

Belgian Attitude Is Key

It would appear at present that the future of the entente depends upon the Belgian attitude; and under pressure of the general consensus of opinion, and of the influence of powerful financial groups in Belgium, which have a control on the steel industry, it is still believed to be possible to reorganize the entente on a sound basis. The eventual participation of Great Britain is contemplated in some quarters.

The International Rail-Makers' association and the Internationl Wire Rod syndicate functioned satisfactorily, and no further changes were made in prices since the rail association reduced the basis price for rails to £5 10s in July.

Conditions in the other countries of Europe during the summer months did not change materially, but, with the exception of one or two specific cases, the tendency appears to be toward an improvement.

Republic Revises Pipe Card

Republic Steel Corp., Youngstown, O., has issued a new price card, effective Oct. 1, on Toncan copper molybdenum iron pipe. The new card, No. 4, embodies a simplified method of computing prices and reflects slight changes in prices of various sizes.

Stove Works Is at Capacity

The A. & J. Stove Works at Gadsden, Ala., has received many new orders recently and after over a year of part time production is operating on a full time and full capacity basis.

The Business Week In Washington

RECONSTRUCTTION FINANCE CORP. is expected soon to grant a loan of $75,000,000 for the proposed vehicular tunnel under the Hudson river at Thirty-eighth street, New York, requiring 150,000 tons of steel. New York City authorities are not entirely in accord with the project, backed by the Port of New York Authority, but it is said that most of the major difficulties have been ironed out.

During the third quarter, the R. F. C. authorized loans to railroads amounting to $50,484,209, including $6,169,790 to receivers. Since its organization, the R. F. C. to Sept. 30 had loaned $264,366,933 to railroads.

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Interstate commerce commission has suspended until May 15, 1933, the operation of certain railroad schedules which propose to establish reduced proportional rates on iron and steel articles, in carloads, from Atlanta, Ga., Birmingham, Ala., Knoxville, Tenn., and other Alabama, Georgia and Tennessee origins to New Orleans, and from New Orleans to Baton Rouge, La., to Beaumont, Galveston, Houston and other Texas ports and intermediate points.

As an illustration, the commission states that the present rate from Birmingham to New Orleans is 34c per 100 pounds while the new proposed rate is 20c. From New Orleans to Houston the present rate is 51c and the proposed rate 20c.

The commission also has found that the proposed reduced carload rates on iron and steel articles from Chicago and Peoria, Ill., Manitowoc and Milwaukee, Wis., St. Louis, and points taking the same rates, to St. Paul, Minneapolis and Duluth, and to intermediate points in Iowa, Minnesota and Wisconsin are justified. The suspension orders have been vacated.

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A policy in regard to present surcharges on freight rates will be considered at a meeting of the Association of Railway Executives in New York about Nov. 11. The surcharges were made effective Jan. 3, 1932, and expire March 4, 1933; they were granted by the interstate commerce commission in lieu of a horizontal increase in rates. Revenue for 1932 from the surcharges, being administered by the railroads from a pool, will be $60,000,000 to $70,000,000.

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Secretary of the Treasury Mills has been urged by Senator Oddie, of Nevada, to invoke the antidumping act of 1921 against manganese ore imported from British India, the Gold Coast. Brazil and Russia.

There is sufficient evidence gainst the dumping of this manganese ore, he stated, to base a dumping order. The matter comes up again at this time because of the recent order of the commissioner of customs in connection with the holding of appraisement on certain steel imports.

Rail Price Cut an Aid to Recovery

STEEL rails achieved page one publicity last week when their price of $43 per gross tons, pegged exactly a decade, or since Oct. 1, 1922, was reduced to $40.

Since this adjustment, announced by the Carnegie Steel Co. and adopted by other producers followed a conference in New York between railroad executives and Myron C. Taylor, chairman of the United States Steel Corp., it is believed that the usual year-end placement of rails is expedited. Similar conference was held at Chicago between steel executives and western railroad men.

Talk of orders for a round million tons of rails is discounted. Probably, individual roads will make their commitments for 1933 shortly, and if the aggregate were only several hundred thousand tons it would push the steel operating rate up several points. R. F. C. loans presumably will finance some purchases.

A year ago, at the instigation of Senator Couzens, of Michigan, the department of justice made an investigation of the pegged rail price, but never made a report. It was contended by the mills that since rail prices did not rise with other products, a reduction then was not logical.

No steel product is made more exactingly, producers have invested many millions in improvements to roll heavier and longer sections, and because rail business is allotted on a reciprocal basis for freight, the price has been regarded as exempt from normal market influences.

Going back into history 30 years, rails were steady at $28 from 1902 to Jan. 1, 1914, when they advanced to $30. During the war they attained a peak of $57, slipped back in 1919, but regained $57 during most of 1920. By Nov. 1 they dropped to $40, rising to $43 Oct. 1, 1922.

The peak production year for rails was 1906—3,977,887 tons. In 1931, output was 1,157,751 tons. Thus far in 1932 the railroads have ordered 181,012 tons and released 26,000 tons carried over from 1931.

Imports of Iron, Steel in 1932 Cost 17,788,596 Man-Hours

WASHINGTON — Imports of iron and steel in the first half of 1932 have cost American workmen employment at the rate of 17,788,596 man-hours for the entire year, declared G. H. Charls, assistant to R. P. Lamont, president of the American Iron and Steel institute, New York, in a hearing on dumping conducted here Oct. 20 by F. X. A. Eble, commissioner of customs.

Mr. Charls' computation is based upon a requirement of five tons of raw material to make one ton of finished steel, and imports of 205,152 tons in the first half of 1932, which he doubled to arrive at his estimate of loss of employment for the entire year.

In addition to Mr. Charls, those who participated in the hearing included W. H. Johnstone, Bethlehem Steel Corp., John W. Logan, Alan Wood Steel Co., and Harry A. Black, Black Hardware Co., Galveston, Tex.

Thomas J. Doherty, tariff counsel of the institute, handled witnesses for the industry. Following the open hearing, which was also attended by importers, an executive session was held by Mr. Eble at which domestic manufacturers submitted some of their production costs.

As the hearing got under way, George E. Dix, of the Steel Union Inc., importing interest, New York, argued for an opportunity to reply immediately to the dumping charges. It was pointed out by Mr. Eble that the law is for the protection of domestic producers and that the latter had the right to present their case as they saw fit.

Unfair Competition Cited

Mr. Doherty pointed out some of the difficulties unfair competition between the domestic and foreign steel sales. In some cases, he stated, steel products are being sold in the United States at less than their cost of production in the country of origin. He also discussed the inadequacy of the customs regulations under the dumping law and pointed out the fact that the damage has to be actually done before the law is effective and he contended that the regulations do not carry out the purpose of the dumping law and suggested that they should be amplified. He made definite suggestions along this line.

There is a constant pressure, said Mr. Charls, for the reduction in the price of steel due to foreign imports. Reinforced concrete bars, he told the commissioner, pay a duty of 3/10 of 1c per pound, which is $6 per ton or about 15 per cent ad valorem. Galvanized sheets are landed in New York, duty paid, and can be sold for $30 per ton less than by domestic manufacturers.

Mr. Charls, pointing out the increasing foreign competition, stated that during August, 1931, there were 1,401,264 cotton ties imported into the United States and that in August, 1932, imports had increased to 9,879,278.

Mr. Johnstone testified that his company is not earning its operating expense at this time and he said that a part of this trouble is directly due to foreign competition.

Structural steel shapes, he stated, were imported to the amount of 72,329 tons in 1931. American manufacturers, he testified, could have produced all of these shapes. This competition was on both the Atlantic and Pacific seaboard and there is a duty of $4 per ton on these shapes. They sell for $40 per ton on the Atlantic Coast, making the duty about 10 per cent.

More Protection in Canada

This is not protection, he said, but merely a tax on the importer. Mr. Johnstone stated, in answer to a question from the commissioner, that importers now are offering shapes duty paid and delivered at from $20 to $22 per ton, with which price the American producer cannot compete.

Mr. Johnstone pointed out that at present Canadian producers are getting three times the protection on shapes that domestic manufacturers are getting and the Canadians have always got twice as much protection. German producers are also getting full protection, so that American manufacturers cannot compete there, and in France, Belgium and Great Britain there is adequate protection.

Principal competitors of the United States in structural shapes, Mr. Johnstone testified, are Belgium, Luxemburg, Germany and France, in the order named.

A total of 39.4 man hours is needed in the production of one ton of structural shapes, he stated, and in addition the transportation man power for the raw material is 14.8 hours, making a total man power for one ton of shapes to be 54.2 hours in its production without counting in the cost of delivery in man hours. Half of the cost of a ton of shapes, he said, is used for labor costs.

"We cannot meet dumping prices," said Mr. Johnstone and he stated that steel products are being sold at a lower cost in the United States than the actual cost of production in the country or origin. Dumping, he said, comes about periodically and always comes during times of stress.

Mr. Black testified that his company had been driven from the barbed wire trade because of low price of imported wire. The wire, he said, duty paid, is laid down at Galveston at $2.13 per 100 pounds while his cost of production is $2.88 or a difference of $15 per ton.

Mr. Logan asked that the customs bureau also issue a dumping order in connection with pig iron. He said that the largest imports of pig iron come from Netherlands, British India and Great Britain, and now he testified that Japan is getting into the market. A sample shipment of Japanese pig iron is now in the United States, he stated, and the Japanese offered 300,000 tons.

Judson Lights Open Hearth, Reopens Its Bar Mill

Judson Mfg. Co., San Francisco, has reopened its bar mill at Emeryville, Calif., after being idle for several years. At present, one of three 30-ton open-hearth furnaces is in operation. The capacity of the bar mill is 250 tons a day. Only reinforcing steel bars are being rolled.

The company will distribute its products through regular channels in California, Oregon and Washington. Carlos J. Maas is president and N. A. Becker, former superintendent of the Pittsburg plant of the Columbia Steel Corp. prior to that company's acquisition by the United States Steel Corp., is vice-president in charge of operations.

The re-entry of the Judson company in the bar market has resulted in the weakening of the price structure from 2.50c, base, in carload lots to 2.40c.

Extends Duties Two Years

New York—Great Britain has extended for two years from Oct. 25 the existing duties of 33 1/3 per cent on pig iron and nearly all iron and steel products. The duty on pig iron as first imposed was on a revenue basis on 10 per cent, but on June 14, 1932, this was raised to 33 1/3 per cent, the same level as other iron and steel.

Furnace Plant Running Full

The Agricola Furnace plant, Gadsden, Ala., is running full time now. Orders recently have been coming in at an encouraging rate and the prospect is good for continued production during the winter months.

September Exports, Imports Show Gain Over August

EXPORTS and imports of iron and steel of the United States both gained slightly in September, according to figures compiled by the iron and steel division of the department of commerce. Exports rose from 32,955 tons in August to 36,038 tons in September, an increase of 3083 tons; imports gained 5618 tons, from 23,623 tons to 29,241 tons.

Total exports for nine months in 1932 were 443,306 tons, compared with 792,842 tons in the parallel period of 1931. Imports for ten months were 280,275 tons in 1932 and 331,237 tons in 1931.

Export gains over August were in small figures and declines were also of little account. Pig iron and ferromanganese exports declined sharply and steel skelp was also markedly less. Gains were registered in wire rods, all classifications of steel sheets, oil line pipe and welded black and galvanized steel pipe. Barbed wire and plain wire also showed somewhat better export tonnage.

In imports, scrap rose sharply from 864 tons to 4390 tons and iron ore declined from 25,292 tons to 18,810 tons, pig iron imports being almost balanced at 7198 tons for August and 7250 tons for September. Manganese imports dropped from 3339 tons to 620 tons in September.

Canada led all countries in tonnage entering the United States, with a total of 7605 tons, compared with 2384 tons in August. Belgium and the Netherlands were second and third, with 6687 tons and 6062 tons, respectively, each making a small gain over August. Imports from Germany dropped from 5512 tons in August to 2623 tons in September.

Except for the Netherlands and the United Kingdom, the 9-month period to the end of September showed a decline in 1932 from 1931 in the case of practically all countries contributing to imports. Other exceptions are of slight moment.

Details of steel imports were not compiled at the hour of going to press and will be presented next week.

FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

Gross Tons

	1932		1931	
	Imports	Exports	Imports	Exports
Jan.	31,053	40,660	41,628	92,719
Feb.	26,738	40,492	28,045	91,161
March	41,031	49,927	40,402	109,324
April	36,339	58,118	47,872	101,434
May	39,751	80,477	37,176	95,046
June	34,494	52,081	37,819	75,577
July	18,005	52,558	37,190	84,465
Aug.	23,623	32,955	30,139	73,338
Sept.	29,241	36,038	30,966	69,778
(9 mo.)	280,275	443,306	331,237	792,842
Oct.	.....	.....	29,401	59,335
Nov.	.....	.....	34,658	59,556
Dec.	.....	.....	25,812	57,263
Total	.....	.....	421,108	968,996

ORIGIN OF SEPTEMBER IMPORTS

Gross Tons

	Iron ore	Pig iron	Manganese ore	Ferromanganese
Cuba	11,090	.....	620	.....
Soviet Russia	7,810	.....	.....	.....
Germany	.....	.....	50	.....
Netherlands	.....	.....	6,043	.....
Norway	.....	.....	2	.....
United Kingdom	.....	.....	40	.....
Canada	.....	.....	59	.....
British India	.....	.....	1,056	.....
France	.....	.....	.....	.....
Total	18,810	7,250	620	1,163

	Steel ingots	Steel scrap	Steel bars	Cast iron pipe
Sweden	16	.....	42	.....
France	37	.....	130	.....
United Kingdom	38	.....	18	.....
Canada	.....	4,390	.....	.....
Belgium	.....	.....	961	.....
Germany	.....	.....	36	.....
Czechoslovakia	.....	.....	6	.....
Total	91	4,390	1,193	.....

EXPORTS OF IRON AND STEEL PRODUCTS FROM THE UNITED STATES

Gross Tons

Item	Sept. 1932	Aug. 1932	Sept. 1931
Pig iron	54	194	668
Ferromanganese, spiegel	6	2	36
Iron, steel scrap	5,995	12,578	10,000
Ingots, blooms, billets, slabs, sheet bars	143	53	950
Iron bars	28	25	98
Steel bars	978	760	2,000
Alloy steel bars	72	82	37
Wire rods	2,313	469	2,675
Boiler, other plates	442	783	2,523
Skelp, iron or steel	212	2,201	3,577
Iron sheets, galv.	139	62	202
Steel sheets, galv.	1,964	944	2,889
Steel sheets, black	3,449	2,010	6,639
Iron sheets, black	160	73	234
Hoops, bands, strip	1,043	648	1,098
Tin, terneplate	5,100	2,449	7,236
Water, oil, gas and other tanks, except lined, etc.	336	72	115
Shapes, not fabricated	993	1,715	9,520
Shapes, plates, fabricated	413	410	843
Metal lath	72	52	285
Frames, sashes and sheet piling	1,096	631	191
Rails	864	221	1,576
Rail fastenings	192	177	307
Boiler tubes, seamless and welded	231	470	656
Casing and oil-line pipe, seamless and welded	2,193	234	1,126
Seamless black pipe, other than casing (1)	28	43	.....
Malleable-iron screwed pipe fittings	141	105	218
Cast-iron screwed pipe fittings	40	46	96
Cast-iron pressure pipe and fittings	336	16	897
Cast-iron soil pipe and fittings	119	155	161
Welded black and galv. steel pipe	2,868	2,132	7,201
Welded black and galv. wrought-iron pipe	341	116	594
Riveted pipe and fittings (1)	1	43	.....
Plain black or galv. iron or steel wire	491	318	835
Barbed wire and woven-wire fencing	1,367	906	1,005
Woven-wire screen cloth	44	49	55
Wire rope	104	72	211
Insulated iron or steel wire and cable	4	5	6
Other wire and manufactures	128	188	672
Wire nails	456	331	340
Tacks	23	24	37
Other nails, staples	188	159	234
Bolts, machine screws, nuts, rivets, washers	223	153	272
Iron castings	200	200	256
Steel castings	52	136	99
Car wheels and axles	69	222	523
Horseshoes	3	23	62
Forgings	324	198	533
Total	36,038	32,955	69,778

(1) Not shown prior to 1932.

Canadian Tariff a Wall, Nevertheless

CANADIAN and American authorities alike are attempting to soften the blow, but as the new Canadian tariff duties and the preference granted to British mills are studied it is increasingly clear that a serious barrier to shipments of American iron and steel into Canada has been raised.

Luther Becker, chief, iron and steel division, department of commerce, points to Canada being a restricted market at this time on account of general business conditions. He does not expect a real test until buying starts.

Mr. Becker believes Canadian consumers will continue to buy autobody sheets and wide-flange beams in the United States, both of these products not being heavily produced in England. In 1929, Canada took less than 2 per cent of the American steel production, according to Mr. Becker.

Sir Newton Moore, president, Dominion Steel & Coal Co., Sydney, N. S., states that although the Canadian steel industry does not benefit directly, all industries in the dominion must eventually be aided by the stimulation which the agreements will give to trade. He is certain that as a result of the preference granted to English products, English mills will more extensively utilize Wabana ore.

R. S. Hart, vice president, National Steel Car Corp., Hamilton, Ont., states that widening of the preference on railway axles will encourage purchases from Britain rather than the United States.

W. B. Champ, president, Hamilton Bridge Co., Hamilton, Ont., visualizes Canadian consumers getting plates from Britain cheaper because of the preference.

Industrial Men in the Day's News

Henry S. Beal, President, National Machine Tool Builders' Association

A NATIVE of Illinois, he received his university education in New Hampshire and Germany.

HIS entire business career—22 years—he has been identified with the Jones & Lamson Machine Co.

FOR six years he has been active in the Tool Builders' association, having previously been second vice president.

—*Bachrach*

HENRY S. BEAL, who was elected president of the National Machine Tool Builders' association at its convention in Swampscott, Mass., Oct. 9-11, is general manager of the Jones & Lamson Machine Co., Springfield, Vt.

A native of Rockford, Ill., Mr. Beal attended Dartmouth college, Hanover, N. H., for two years, and studied later at the University of Berlin for one year.

Leaving college in 1910, he entered the employ of the Jones & Lamson company, starting in the shop and advancing steadily to assistant general manager, and after five years in that post becoming general manager six months ago.

For six years Mr. Beal has been active in the affairs of the National Machine Tool Builders' association, being second vice president prior to being made president.

COL. GEORGE M. MORROW JR., for the past several years vice president of the Goslin-Birmingham Mfg. Co. Inc., Birmingham, Ala., has been elected president, to succeed the late Julius Goslin. The new president is a graduate of West Point and served as a lieutenant-colonel during the World war. The Goslin-Birmingham company is a consolidation of the former Birmingham Foundry & Machine Co., of which Colonel Morrow was president, and the Joubert & Goslin Foundry Co.

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Glenn E. Weist, formerly sales engineer of the Milwaukee hoist division of Harnischfeger Corp., Milwaukee, has been put in charge of engineering for the Kron Co., Bridgeport, Conn., manufacturer of industrial scales. Mr. Weist is a graduate of Purdue university.

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L. L. Knox, formerly connected with a number of steel companies in the Pittsburgh district, and who in 1911 organized the Knox Pressed & Welded Steel Co., which was later merged with the Blaw-Knox Co., has returned to the Pressed Steel Car Co., Pittsburgh, as special representative to develop the sale of such special products as water-cooled furnace parts, bridge railings, etc.

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I. Lamont Hughes, president, Carnegie Steel Co., and C. S. Belsterling, vice president in charge of traffic, United States Steel Corp., were speakers at a dinner given in honor of John A. Coakley, newly appointed traffic manager of the subsidiary companies of the United States Steel Corp., at the Duquesne club, Pittsburgh, Oct. 18.

Mr. Coakley was honored by friends and associates at Cleveland by a dinner Oct. 14.

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Victor Windett, manager of the gas producer division of the Wellman Engineering Co., Cleveland, since Jan. 1, 1928, has resigned, effective Oct. 31.

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J. E. Culliney, Bethlehem Steel Co., Bethlehem, Pa., was made vice president for engineering of the National Safety council, Chicago, at the recent convention in Washington.

E. J. Smith, Western Electric Co., Chicago, was chosen general chairman of the power press section of the council, and P. J. Hunter, Motor Wheel Co., Lansing, Mich., vice chairman.

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S. H. Mortensen has been appointed engineer in charge of all alternating current design for the Allis-Chalmers Mfg. Co., Milwaukee, to succeed the late R. B. Williamson. Mr. Mortensen was first assistant to Mr. Williamson for many years.

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Walter Geist, assistant manager, milling machinery department and Texrope drive division, Allis-Chalmers Mfg. Co., Milwaukee, has sailed for Europe, where he will spend three months making a survey of business possibilities and call on Allis-Chalmers manufacturing and sales organizations in Great Britain, France, Italy, Germany, Switzerland and other countries.

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J. S. Tritle, vice president and general manager of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been elected president of the

National Electrical Manufacturers association.

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Frederick A. Geier, president, Cincinnati Milling Machine Co., has been appointed chairman of the committee on industrial rehabilitation for the Cincinnati district.

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J. J. Donovan, manager of the air-conditioning department of the General Electric Co., has been elected a director of the American Oil Burner association, New York, which the General Electric Co. has joined.

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James L. Crawford, formerly connected with Laclede-Christy Clay Products Co., and the Mellon Institute of Industrial Research, has been made general manager of the Walsh Refractories Co., St. Louis.

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F. W. Waterman, president, National Tube Co., Pittsburgh, has been appointed chairman of the national share-the-work movement for the Pittsburgh district. J. E. Galvin, president, Ohio Steel Foundry Co., Lima, O., is head of the movement in the Fourth Federal Reserve district.

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C. L. Bardo, president, New York Shipbuilding Co., has been elected a director of the Allis-Chalmers Mfg. Co., Milwaukee, to fill a vacancy of some duration. The Shipbuilding company is an outgrowth of the American Brown Boveri Co., the electrical divisions of which were purchased by Allis-Chalmers a year ago.

Say Alien Iron Hits Scrap

Imports of pig iron from Japan, India and Holland at prices below the cost of manufacturing pig iron in the United States are destroying the market for low-grade blast furnace scrap, it was declared at a recent meeting of the Philadelphia chapter of the Institute of Scrap Iron and Steel Inc. In line with previous action by the Boston chapter, Benjamin Schwartz, director-general of the institute, was authorized to investigate and file a complaint at Washington if warranted.

60 Days' Scrap on Yards

Scrap yards have an accumulation sufficient only for two months consumption at a 25 per cent rate of operation at steelworks, Benjamin Schwartz, director-general, Institute of Scrap Iron and Steel, New York, said Oct. 19 in addressing the Rotary club of Youngstown, O. In relation to finished steel, scrap is approximately $3 a ton below its value as a raw material, he said. The recent increase in prices added $2,000,000 to the value of scrap accumulations, he claimed.

Obituaries

ARTHUR L. DAVIS, vice president in charge of sales for the American Bridge Co., Pittsburgh, died at Atlantic City, N. J., Oct 19. Mr. Davis was born in San Francisco and for three years after his graduation from high school served as a member of various surveying parties. Shortly afterward he went East, and in 1889 was graduated from the Massachusetts Institute of Technology, Boston, as a mechanical engineer.

His first position was as draftsman for the Vermont Construction Co., St. Albans, Vt., and three years later he became bridge engineer for the Central Vermont railroad, later becoming affiliated with the Rutland railroad in a similar capacity. A year later, Mr. Davis returned to the Vermont Construction Co., and from there in the late nineties went with the Berlin Iron Bridge Co., East Berlin, Conn., as sales manager. This company was absorbed by American Bridge Co. of New Jersey in 1900, and Mr. Davis went to New York, where he had his headquarters until July, 1931, when he was moved to Pittsburgh.

In 1900 he first served under the late W. H. McCord and shortly afterward became assistant to the late Joshua A. Hatfield, then president of the company. From 1914 until 1927, Mr. Davis was eastern contracting manager. In the latter year he was appointed general contracting manager and in July, 1931, was named vice president in charge of sales at Pittsburgh. Mr. Davis was on his vacation at Atlantic City when stricken with pneumonia last week

He was a member of the American Iron and Steel institute, the Engineers' club, the Railroad club, and several other engineering organizations. Funeral services were held at Mt. Vernon, N. Y.

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Elmer O. Williams, 65, tool manufacturer, Evanston, Ill., died Oct. 13.

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John B. Farr, president, Kermath Mfg. Co., Detroit, manufacturer of marine engines, died Oct. 17.

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William E. Austin, 74, retired president of the W. E. Austin Machinery Co., Atlanta, Ga., died Oct. 14.

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Charles E. Hanna, 49, partner of the Walker Hardware Co., Belleville, Ont., and former president of the Hardware Association of Canada, died Oct. 10.

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George Kinsey, 84, head of the George Kinsey Steel Co., Cincinnati, whose death was noted in STEEL for Oct. 17, at one time was district sales manager at Cincinnati for the Jones & Laughlin Steel Corp. He was the father of Boyden Kinsey, also a former district sales manager at Cincinnati.

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Hans Luthi, 52, superintendent of plants of the Nash Motors Co., Kenosha, Wis., died Oct. 11. He was identified with the Jefferey works at Kenosha from 1906 to 1916, when Nash acquired it.

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Clarence E. Fowler, manager of the branch sales office at Toronto, Ont., of the Independent Pneumatic Tool Co., Chicago, was mortally wounded while hunting and died Oct. 15.

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Will R. Stedman, 70, of Stedman's Foundry & Machine Works, Aurora, Ind., died Oct. 3. The company was founded by his grandfather, N. R. Stedman, and with it his father and brother were associated.

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John A. Oberhelman, 70, founder of the J. A. Oberhelman Foundry Co., Cincinnati, died recently. He had retired from the foundry but was vice president of the King Machine Tool Co., Cincinnati.

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H. J. Eisaman, 74, for many years associated with the former A. Garrison Foundry & Machine Co., Pittsburgh, which is now a part of the Mackintosh-Hemphill Co., Pittsburgh, died at Brownsville, Tex., Oct. 16.

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Maj. Wensel Morava, 79, consulting engineer and founder of the Morava Construction Co., Chicago, of which he was president from 1901 to 1924, when his company was purchased by the Bethlehem Steel Corp., died at Chicago, Oct. 13.

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C. T. Fairbairn, 65, prominent mining engineer and former southern manager for the Republic Iron & Steel Co., Birmingham, Ala., died Oct. 16 at Louisville, Ky.

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Tinius Olsen, 86, known internationally as a designer and manufacturer of testing machines, died at Philadelphia, Oct. 20. Born at Kongsberg, Norway, he was educated in various schools in his native land. In 1869 he came to the United States, becoming a draftsman for William Sellers & Co., Philadelphia. At a Lutheran Sunday school he became acquainted with brothers named Riehle, and for them designed his first testing machine. In 1872 he became identified with Riehle Bros., but in 1879 he founded his own business. At various expositions he won prizes, and he was decorated by the King of Norway. To his native city of Kongsberg he made many benefactions. A son, Thorsten Y. Olsen, has been associated with him in business.

MIRRORS OF MOTORDOM

DETROIT

SURFACE indications in the automobile industry convey an impression of great activity. Almost without exception, manufacturers are making final revisions of specifications for new models or are beginning to take in material and parts. Supply interests are busy maturing orders into releases.

A typical automobile reception room has handled more out-of-town salesmen in the past two weeks than in any fortnight in several years. Over the all-time low of August, shipments of pig iron and finished steel into the Detroit area have registered successive increases in September and October. Even including Ford, employment is slightly higher.

Nevertheless, a barely-distinguishable note of uncertainty is creeping in, due in part to apprehension over the election. When analyzed, only Chevrolet and Plymouth are plunging into really vigorous production programs, and even Chevrolet will make fewer cars this quarter than were originally scheduled. Other manufacturers are playing the game exceedingly close.

Election Affects Schedules

Some have delayed a start on production several weeks; excepting Chevrolet and Plymouth, all propose to assemble only the minimum required for dealer and show purposes, although a favorable outcome of the election—from the industry's viewpoint—might result in some expansion.

Accordingly, material suppliers are not anticipating requirements and, in general, are producing only against actual releases. Parts makers, some of whom have comparatively large inventories of Ford parts, are more cautious. Automobile manufacturers and their supply interests alike are set to go, but are more inclined to feel their way than seemed probable a month ago.

Buick has not attained full production, scheduled to begin Oct. 17, owing to last minute changes in body details which delayed Fisher, but it still is expected to be first to show its 1933 line, early in November. Buick dealers have cleaned up their stocks; in fact, there has been a small shortage. Its extremely low-hung body will distinguish Buick in 1933. The initial run will be 10,000 to 12,000 units.

New Transmissions Near?

Plymouth also has been delayed by last minute changes in body dies, but Briggs is understood to have received some releases, and assembly will start shortly. The report that Plymouth will be a six has been officially confirmed. It also will be a full-sized car, probably about 107-inch wheelbase, but will be priced in the vicinity of $400 for the base model. At the start, a program of 1000 units a day is contemplated, and Plymouth will go vigorously after the low-price market.

In Detroit, Buick and Plymouth are conceded to have done more experimenting than other manufacturers with new transmissions. The approach seems to be diametrically opposite—Plymouth aiming for a clutchless car and Buick for a leverless one.

An unconfirmed report has the new Plymouth without a clutch and Buick with a button control replacing the gearshift lever—something attempted in the old Premier and Owen Magnetic—but there is nothing definite to indicate that these makers will go the full length of these departures in 1933. Buick and Studebaker also have been experimenting with independently-hung wheels.

There appears to be no doubt that Chevrolet will enter two sixes in the race this year—one being a refinement of the present series and the other a stripped, economy car, much lower priced, and probably also to be called Chevrolet instead of Mercury. In the larger Chevrolet the hood will reach from radiator to windshield. Chevrolet's bodies also will be low hung, and the first run will be 55,000 to 65,000.

Ford operations being so vital to Detroit, this city is intensely interested in the situation at Fordson. The status at this time is that the Fordson staff has been reduced to one shift working three days a week, with daily assemblies considerably below 1500 units. The plant has been virtually closed to outsiders. Current material purchases have been restricted rigidly to production purposes. Some parts have been called in from distributors, for assembly. Briggs appears to be working on a Ford program.

The inference from this is that a model change is approaching, probably not to be disclosed until the new Plymouth and Chevrolet have been shown. With Plymouth now a six, Ford and Austin are the sole remaining fours. A forecast is that the Ford eight will be improved, the chassis and body enlarged, and the price increased slightly; the four may remain as a truck, but a new six, priced lower than the present four, is a probability. There is some talk that the engineering work is being done at the Ford plant in England; also, that the small English car is being adapted for the American market.

Willys Short 2000 Cars

Willys-Overland ended its production run on 1932 models with a shortage of about 2000 cars under dealers' requirements. . . . Franklin is assembling a medium-price air-cooled series, with a supercharger, to sell for $1385. . . . Dominion Motors Ltd., Toronto, Ont., expects to begin production in January of the low-price Frontenac, sponsored by Continental Motors. . . . Packard is now casting its 12-cylinder engine in its own foundry. . . . National Steel Corp. is bringing cold pig iron by

(*Please turn to Page* 60)

EDITORIAL

Research Activity Key to Important New Markets

IN CONSIDERING future markets for materials and equipment ample allowance should be made for the influence of new products. Inventive genius thrives on adversity, and today while business is at low ebb research activities in many important industries are being maintained at a high level.

Proof of this is found in a recent study of the National Research council which showed that of 350 companies reporting, half spent more for research in the lean year of 1931 than in the prosperous year of 1929. Another fifth of the companies invested approximately as much in 1931 as in 1929. Still more significant is the fact that whereas in 1928 a similar survey showed that no company reporting placed major emphasis on research conducted for the purpose of developing new products, the current study based on 1931 experience shows that 35 per cent of the companies consider new products as the principal function of their research activity.

This evidence should be gratifying to every producer of iron and steel and to every manufacturer of equipment because history proves that activity in the creation of new products paves the way for broader markets. In fact, the growth of infant industries born of inventions since the turn of the century has in more than one depression helped to release the nation from the grip of business stagnation.

Redesign of Camera Film Spool Opens Annual Market for 1300 Tons of Strip

Three illustrations taken from recent articles in STEEL's series entitled "Large Uses of Steel in Small Ways," will serve to show what new developments mean in terms of requirements for materials and equipment. In the issue of Sept. 19, the story was told of how the Eastman Kodak Co.—in its attempt to design smaller cameras and provide for eight instead of six exposures on a roll of film—developed a steel cored film spool. The familiar wooden core with steel flanges was discarded in favor of a tubular steel core to which the steel flanges were electrically welded. This important change in design increased the Eastman company's annual consumption of strip steel to 1300 tons and also involved the installation of punch and forming presses and special electric welding equipment.

In the Oct. 3 issue it was shown that about 300 tons of steel had been consumed in 1932 for the manufacture of railroad car pre-coolers. About 400 of these units were placed in operation last summer to cool Pullman cars and passenger coaches at principal railroad terminals. Whether or not this method will be adopted more widely next summer is problematical. However, it is a foregone conclusion that cooled or conditioned air in "de luxe" trains will be demanded and it is predicted that either pre-cooled or the preferable air conditioned cars will be considered standard practice within a year or two. Regardless of what method of cooling or conditioning is adopted eventually, iron and steel will be consumed in fair volume and motors, pumps, fans, valves and other equipment and parts will be required.

Electric Refrigerators Require Heavy Tonnage of Steel, Variety of Equipment

The influence of electric refrigerators on steel consumption was discussed in the issue of Aug. 8. In 1922 about 12,000 units were sold requiring 1200 tons of steel. By 1931 sales of refrigerators had mounted to 965,000 and the steel consumption had increased to 112,500 tons annually. Steel profited not only from the increase in sales but also from the gradually expanding use of steel per refrigerator. In 1922 the average amount of steel per unit was 200 pounds, whereas in 1931 it was 233 pounds. The seemingly insignificant increase of 33 pounds in nine years, when applied to 1931 production, amounts to 15,922 tons—an impressive figure. The modern all-steel refrigerator not only means a consumption of more than 100,000 tons of steel and a sizable tonnage of forgings and castings annually, but also the use of heavy-duty double acting presses, complete enameling equipment, extensive welding apparatus and a great variety of machine tools and other shop equipment.

These three random illustrations are indicative of what is involved in important new technical developments. No one can predict how far this nation will go in its acceptance of refrigerating and air conditioning devices, but it is likely they will grow into an industry of major importance, taking high rank as a consumer of ferrous materials and an employer of equipment.

Meanwhile, do not forget the little things, such as, for instance, camera film spools!

THE BUSINESS TREND

Industrial Activity Continues To Expand Moderately

REPORTS of the trend of business continue to be more favorable than business sentiment. The monthly report of the bureau of labor statistics, issued early in the week, showed a gain of 3.6 per cent in employment in September. Payrolls increased 2.6 per cent. These figures are on the basis of returns from 54,851 reporting companies. In manufacturing establishments, with 2,620,867 employes, employment in September was up 4.5 per cent and payrolls increased 5 per cent. These gains in September constitute a continuation of the moderate rise in August, which marked the reversal of a long decline.

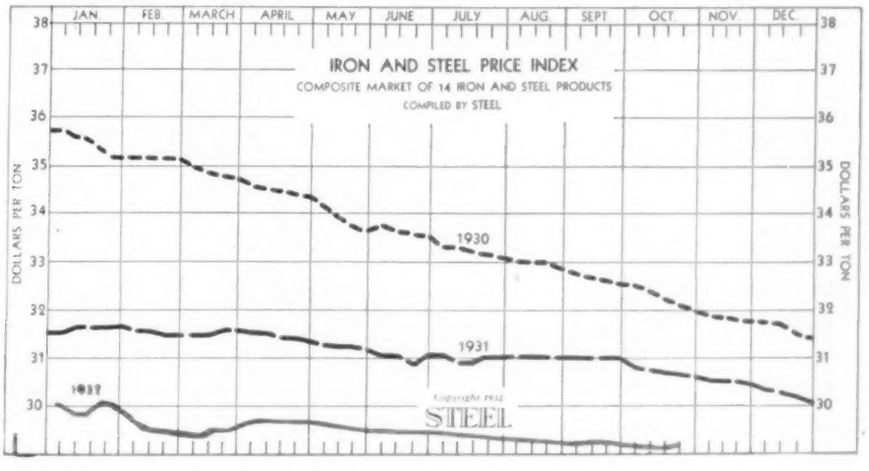
Freight car loadings continue upward. In the week ended Oct. 8, the total was 625,636 cars, a gain of 3561. While the weekly rise is not impressive, it should be noted that the climb of freight volume in 1932 has continued later in the fall than in recent years. Except for the Labor day period, gains now have been registered in nine consecutive weeks. Production of electric power—another barometer of business activity—still is increasing. In the week ended Oct. 8 output was 1,506,219,000 kilowatt hours compared with 1,499,459,000 the previous week. This indicator has been gaining steadily since July.

The October survey of the National Association of Credit Men shows a "decisive" upturn in sales and collections. Bradstreet's reports an increase of 10 per cent in building permits in September. This is based on statistics from 215 important cities.

Against these favorable indications is a softness in commodity prices. Irving Fisher's latest weekly index reveals a drop of 0.5 point to 61.3. This compares with a low of 59.3 in June and a recent high of 63.2 in the second week of September. Most of the monthly wholesale price barometers showed gains for September.

Attitude of Business Leaders Today Is Reminiscent of Situation in 1896

All in all the record for the first half of October warrants a stronger tone in business sentiment that prevails today. In searching through the files of this publication for light on the attitude of business in election years we were obliged to go back to 1896 to find an October in which industrial leaders seemed to be thrown off balance by political considerations to the extent that is apparent today. In that year the market reports reflected a "holding back" and a discounting of actual business improvement that is strangely similar to the situation prevailing in many quarters today.

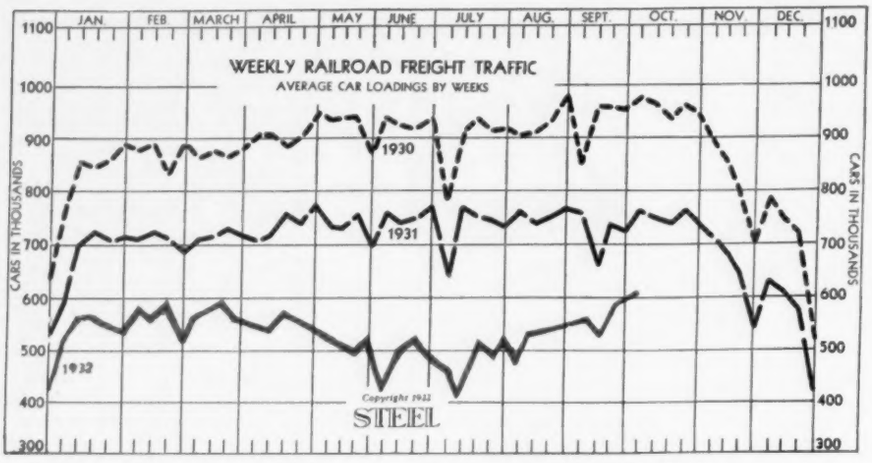


1932

Oct. 15	$29.33
Oct. 8	29.30
Oct. 1	29.32
Sept. 24	29.32
Sept. 17	**29.32**

1931

Oct. 17	$30.76
Oct. 10	30.78
Sept. 30	30.82
Sept. 23	31.02
Sept. 16	**31.03**



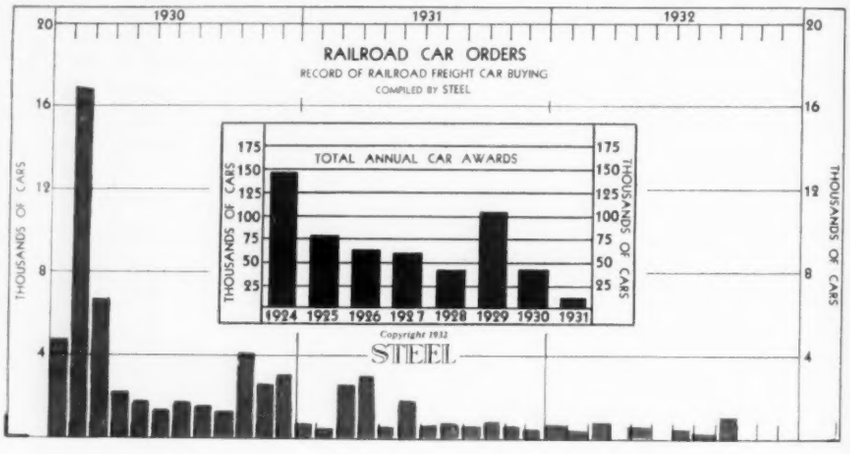
	1932	1931
October 8	625,636	763,818
October 1	622,075	777,712
September 24	595,746	738,036

Freight Traffic Continues To Show Gain

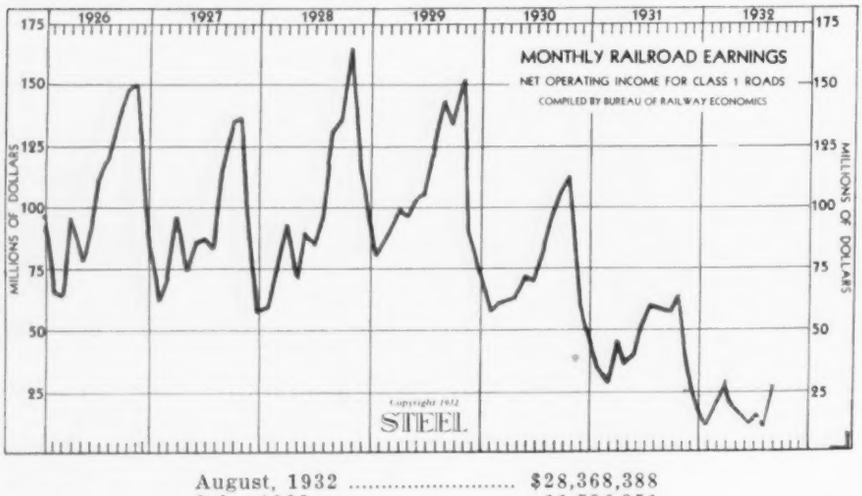
Loading of revenue freight for the week ended Oct. 8 totaled 625,636 cars, the highest for any week so far this year, according to reports filed by the American Railway association. This was an increase of 3561 cars above the preceding week, but 138,182 cars under the corresponding week in 1931 and 329,146 cars under the same week two years ago. Loading of miscellaneous freight and coal was largely responsible for the current rise.

September Car Awards Show Large Gain

Domestic freight car awards in September total 1298 cars. This is by far the highest total thus far this year and compares with 703 units awarded during September last year. However, a very small portion of this business will go to the independent builders, as 1285 cars will be constructed for the Pennsylvania railroad in its own shops. The total for the first nine months is 1687, compared with 8668 in the corresponding period of 1931.



	1932	1931
September	1,298	703
August	5	1,034
July	25	617



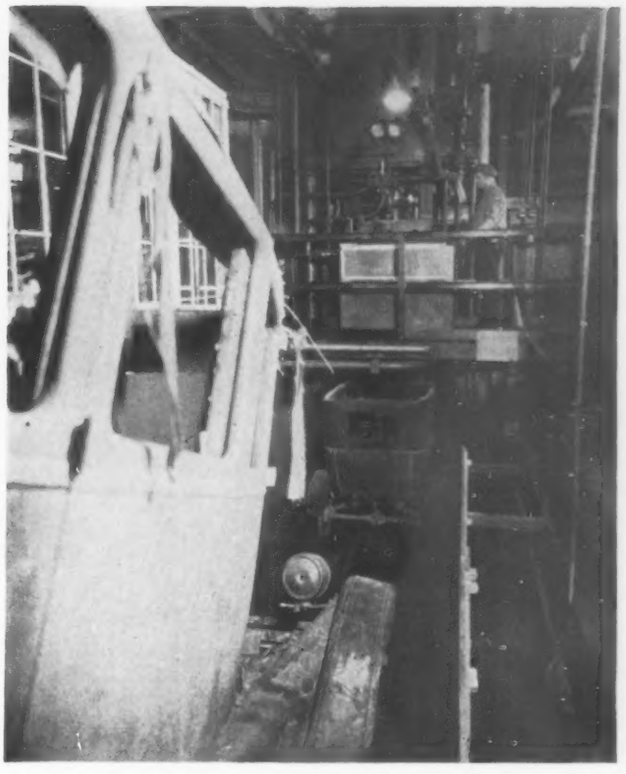
August, 1932	$28,368,388
July, 1932	11,596,851
August, 1931	55,858,734

Railroads Earn Only 0.93 Per Cent in First 8 Months

Class 1 railroads of the United States for August had a net operating income of $28,368,388 which was at an annual rate of return of 0.97 per cent on their property investment. In August, 1931, their net income was $56,444,155 or 1.92 per cent. The current report from the Bureau of Railway Economics reveals a net operating income of $152,294,615, for the first eight months of 1932, which was at the annual return of only 0.93 per cent.

FORD RECOVERS STEEL SCRAP BY DISMANTLING OLD CARS

BY E. F. ROSS
Associate Editor, STEEL



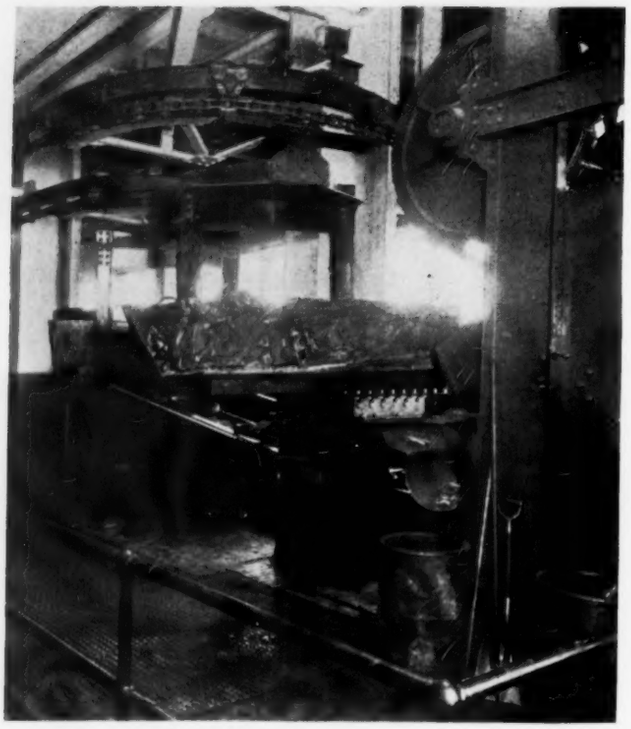
At the end of the disassembly line old cars move down an inclined conveyor into the 1000-ton hydraulic press to be reduced to a bale of open-hearth charging size

WHAT to do with automobiles which are junked or otherwise put out of commission each year has become a real problem with rapid growth of the motor car industry. In the six-year period, 1925-1931, a total of 15,799,859 units were removed from service. This is an average of 2,633,309 cars per year! Many of these cars never reach the yard of a scrap dealer, but are discarded in sundry places to rust away and become unsightly as the years go by.

One of the present-day automobiles weighing 2665 pounds, without oil, gas or water, contains 492 pounds of malleable and cast iron, 1606 pounds of steel in various forms from heavy frame stock and axles to wire, making a total weight of 2098 pounds of iron and steel. The remainder is made up largely of 198 pounds of wood, 82 of rubber, 54 of glass and 53 of cotton. Other metals embrace 26 pounds of brass, 20 of lead, 17 of copper and 5 of tin. Miscellaneous materials weigh 112 pounds.

Based on present low prices, a car of these proportions would be worth about $15 in scrap metals alone. Under normal markets, this value would be increased considerably and if a valuation is placed upon parts and accessories which might be salvaged, the figure would be

A view taken from the Ford steel plant showing some of the 5000 old cars in the storage lot awaiting their turn on the disassembly line. In keeping with the Ford policy of orderliness, the cars are lined up in rows



THE charging device at the 400 - ton open-hearth furnace showing the manner in which a compressed bundle of scrap is removed from a carrier on the long conveyor and put on the charging conveyor

very materially higher. It is to be seen readily then that with 2,633,309 cars abandoned each year, their value may be estimated at from $39,500,000 upwards.

Various efforts have been made during the past few years to salvage automobiles, but these attempts have been limited and have not accounted for the disposal of any large number of cars. It remained, therefore, for the Ford Motor Co., the first automobile maker to set up an assembly line to produce cars on a large scale, to install the first "disassembly" line on which cars are salvaged on a similar scale. Perhaps the day is not far distant when attention of the industry will be directed upon the disassembly line as it has been upon the assembly line.

Lined Up for Slaughter

In a spacious storage lot adjacent to the Ford steel plant at River Rouge, Mich., stand lined up in orderly rows some 5000 derelict cars awaiting their passage into oblivion. These cars, in varying states of dilapidation, are purchased at a flat price of $20 each. No restriction is placed on them as to age, condition or make; the only requirements are that each must have something resembling tires and battery and must be delivered by a Ford dealer to the plant. Many of these cars are brought in on the long trailer trucks used to transport new cars from the factory to dealers.

The company's first effort to scrap old cars on a large scale commenced early in 1930. Three disassembly lines were used—one for Fords, a second for other makes and the third for moving to salvage parts taken off. When a car had been stripped completely, it was placed in a 1000-ton press formerly used to cut up ship scrap and sheared into three sections which were of such size as to permit them to be charged into one of the ten open-hearth furnaces as scrap.

Finding this method of handling too slow, new facilities were installed, including one main disassembly line and an auxiliary conveyor, a 1000-ton hydraulic press capable of compressing a car into a single bale, a monorail conveyor for transporting the bales to the furnace and a 400-ton open-hearth furnace for melting the bales. The new plant, which is located in a bay of the open-hearth building, on the charging side but on a level below the charging floor, went into operation early this year with the completion of the new furnace.

Cars are pulled in from the storage yard to the start of the disassembly line by truck and workmen at once begin the removal of all parts which can be lifted out or taken off quickly. The disassembly line is a slow-moving double-chain conveyor elevated about 30 inches above the floor level and onto it the cars are pulled up an incline with a steel cable and electric winch. Cars are spaced about 3 feet apart on the line.

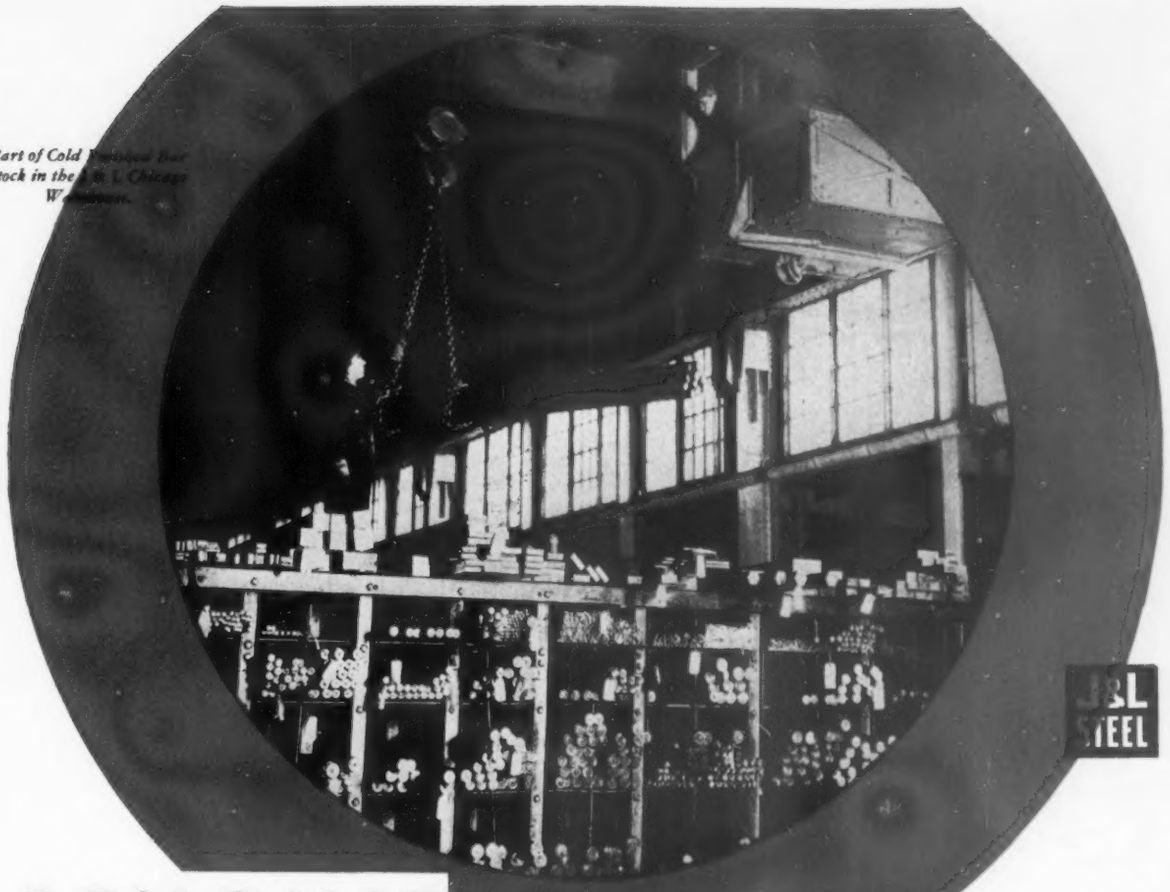
As the cars move slowly forward groups of workmen continue the stripping process, removing spark plugs, vacuum tanks, head lamp lenses and reflectors, radiators, steering wheels, dash equipment, wiring, storage batteries, upholstering, floor boards, bolts and nuts, tires and rims, roofs, window and windshield glass, and many other parts which have a salvage value or are of nonferrous metal. The smaller parts are thrown into steel barrels; larger parts, including the glass, are laid on the conveyor which parallels the disassembly line to the right and are carried to a platform where they are loaded into trucks and taken to the salvage department for sorting, reclaiming, fabricating into various products, or other disposition.

Broken Glass Remelted

Glass is removed directly to the glass plant. Pieces which are of sufficient size and not too severely scratched to make them unserviceable are cut into small panes for use in the many Ford factory buildings. All broken and scrap glass is remelted in the glass furnaces.

Upholstering and fabric in the car interior is moved into a small department to the left of the disassembly line. Here the fabric or leather is removed from seat cushions and the steel springs with their wooden frames returned to the cars on the line. The reclaimed fabric is cut up by machines and sewed into polishing wheels, polishing pads, gloves,

SEVENTH and concluding article of a series describing metalworking processes used by the Ford Motor Co. This article deals with the disassembly line on which the company dismantles and salvages old cars, compressing and remelting the steel in the world's largest open-hearth furnace, a 400-ton unit. Steel recovered from 72,600 cars has amounted to 36,300 tons. Approximately 200 cars can be disposed of in eight hours. Previous articles were devoted to welding, forging, heat treating, pickling and die typing methods used in building the new V-8 and Model B automobiles; these appearing in the June 6, June 20, July 4, July 18, Aug. 1 and Aug. 15 issues of STEEL.



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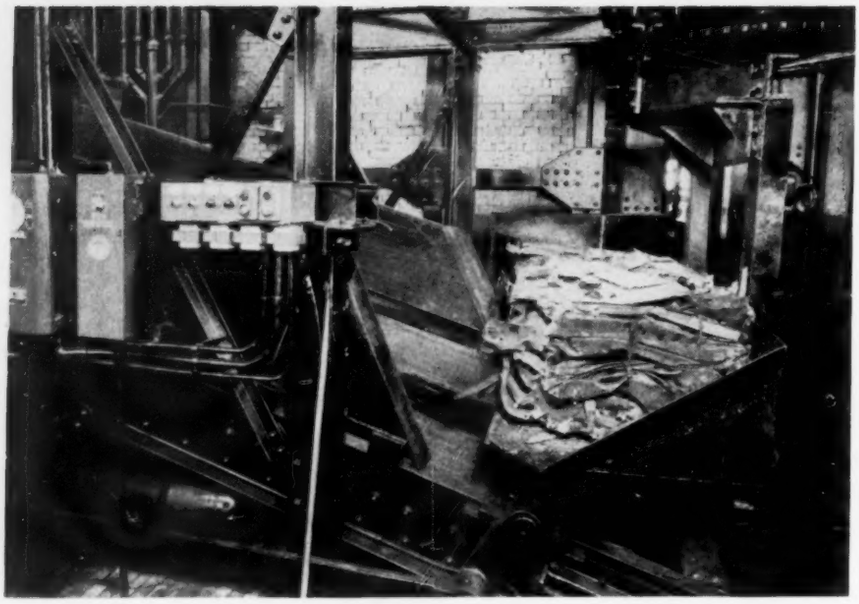


A compressed bundle of scrap—an old car after passing through the baling press is placed on a conveyor pan or basket ready to be taken to the open-hearth furnace for melt-down

hand pads and other articles used by workmen in Ford manufacturing operations. Some of the material is used in making fender pads which are placed between finished fenders as they are stacked for shipment to assembly plants. Leather is cut into aprons for operators of heating furnaces and forging hammers. Stuffing from the upholstery is sent to salvage.

Tires which appear to have salvage value are pulled off the rims so as to preserve them; tires of no value are placed with the rim under a shear and cut in two to facilitate tire removal. All tires are sent to the salvage department where the good ones are reclaimed and the worthless ones are sold as scrap rubber.

Every precaution must be taken to see that nonferrous metals do not go to the open hearth because they would contaminate the steel, therefore, the nonferrous parts are placed in separate containers as they are removed from the cars. Particular attention is paid to the removal of all wiring. All nonferrous parts go to salvage for final disposal.

No attempt is made to remove from the body framework and top wood members which have no salvage value. This wood is compressed with the metal parts and burns up quickly in the high heat of the open-hearth furnace.

Engines Cut Out by Torch

Engines are removed by cutting the engine supports with the oxy-acetylene torch after which they are lifted out with an electric monorail hoist. Model T engines are delivered to a department to the left of the disassembly line where they are completely torn down into the component parts. These engines are first passed through a washing machine to give them a superficial cleaning of oil and grease which facilitates disassembly.

With the methods employed, a Model T motor can be completely disassembled in 35 minutes and as many as 135 have been handled in 8 hours. It is interesting to note that many of the operations are made comparatively simple by using with reversed drive some of the machines originally utilized in Model T engine assembly. Several presses with special punches and fixtures are used to remove wrist pins, bushings and other parts. As parts are removed, they are suspended on hangers on an overhead conveyor and taken either to salvage or open-hearth scrap. Gray iron castings, including the blocks, cylinder heads, housings, flywheels, and the like, are taken to the foundry and are remelted in the cupolas.

Real Crack-Ups

Engines from cars other than Fords are lifted by the hoist onto an overhead platform to the right of the disassembly line where a workman removes such parts as generators, starting motors, carburetors and other small parts. The motor then is pushed down a chute into a gondola car in an adjacent bay. These motors later are moved outside the plant and placed under a skull cracker for demolition. In being broken up, the motors disperse their copper, brass and aluminum parts which are picked up for salvage. What remains of these motors is taken to the foundry and a few at a time are dropped into ladles of iron used in the casting of flywheels.

Some cars on the disassembly line are found to have aluminum bodies and these must be removed before the car can be compressed. Bodies of this metal are marked by an inspector and before the car reaches the press it is lifted off the line with a crane and removed to an adjacent bay where the aluminum is stripped off for salvage. This operation completed, the car is moved back to the line for the compressing operation.

The speed of the disassembly line is so timed and the number of workmen along the line so distributed that dismantling operations are completed when each car approaches the incline down into the compression chamber of the press. As may be seen from an accompanying illustration, the chamber is entirely below the floor level while the platform on which the operator stands is somewhat above floor level.

Skeleton Is Compressed

As the cars reach the end of the line front end forward, they tip and by gravity roll down the incline, coming to rest immediately in front of a large heavy steel door. The operator first raises this door to its full height by operating a valve, then by manipulation af a second valve causes two hydraulic pushers at the bottom of the incline to move the car forward into the chamber. The pushers are returned to their inoperative position and the steel door is lowered.

At this point the compression cycle of the 1000-ton hydraulic press is commenced. The car is first squeezed horizontally against the steel door by a ram which approaches the front of the car and as the pressure continues the nose of the car slides upward on the ram. When the ram comes to rest at a point about 15 inches above the floor of the chamber produces a bale which is about 6 feet long, 3 feet wide and 15 inches thick. By a mechanical pusher this bale is ejected from the chamber endwise to the right side of the press onto a short inclined conveyor which lifts the bale from below floor level to above floor level and loads it into one of a number of special carriers suspended from a monorail conveyor system. A bale being transferred from this conveyor to a carrier is to be seen in an accompanying illustration.

That the compression of a car into a bundle of scrap takes place in the manner previously described is made plain from an examination of the bales. The headlamps and front license plate usually are to be found on the top of the bale and the front axle and front springs are pressed down parallel to the rear axle and rear springs—while the frame is

buckled inward. It is evident, of course, that to produce a bale of smallest size, less pressure is required to compress the axles and springs against each other than would be needed if these parts were compressed transversely or flatwise.

The baling press is fully equipped with interlocking safety devices to prevent improper squence of operations and over-run of ram travel and it is capable of reducing cars to compressed bales at a rate of less than 2½ minutes each, or 25 per hour. The capacity of the disassembly line is limited therefore by the ability of the press to compress the cars.

Pathos in Demolition

An observer views the operation of the press with awe and regret. Each car as it moves along the disassembly line to execution retains its individuality as having been somebody's automobile and even in its decrepit state silently tells a story of long and useful service intimately associated with human beings, their fortunes and misfortunes. But when the great steel door closes behind these veterans one by one, the throbbing of the press mechanism swiftly records the final chapters to these stories, identities are lost and the cars emerge as just so much scrap metal.

After being loaded onto the carriers of the monorail conveyor, the bales are moved to the end of the open-hearth charging floor where they are transferred to a charging conveyor as shown in another of the illustrations. This conveyor, operated by a hand controller shown in the view of the 400-ton open-hearth furnace, elevates the bale up a small incline and loads it into a charging box. This box then is picked up by the charging machine and the bale is charged into the furnace. Ultimately it is planned to synchronize the conveyor between press and furnace so that as a car is compressed and loaded onto the conveyor, another is charged into the furnace.

The new 400-ton open-hearth furnace is the largest in the world and was built in 1931 solely to melt down the large amount of scrap provided in the scrapping of old cars. To provide room for this furnace in the steel plant, it was necessary to tear down No. 10 furnace of the ten 100-units built several years ago. With a bale of scrap weighing on an average of 1000 pounds and with approximately 200 cars being scrapped in 8 hours, the furnace charge in that period would be in the neighborhood of 100 tons. The furnace has four charging doors each made of unusual size to permit easy charging of the large bales. Steel melted down in this furnace is duplexed into the nine 100-ton open-hearths for refining.

Over 100 Employed

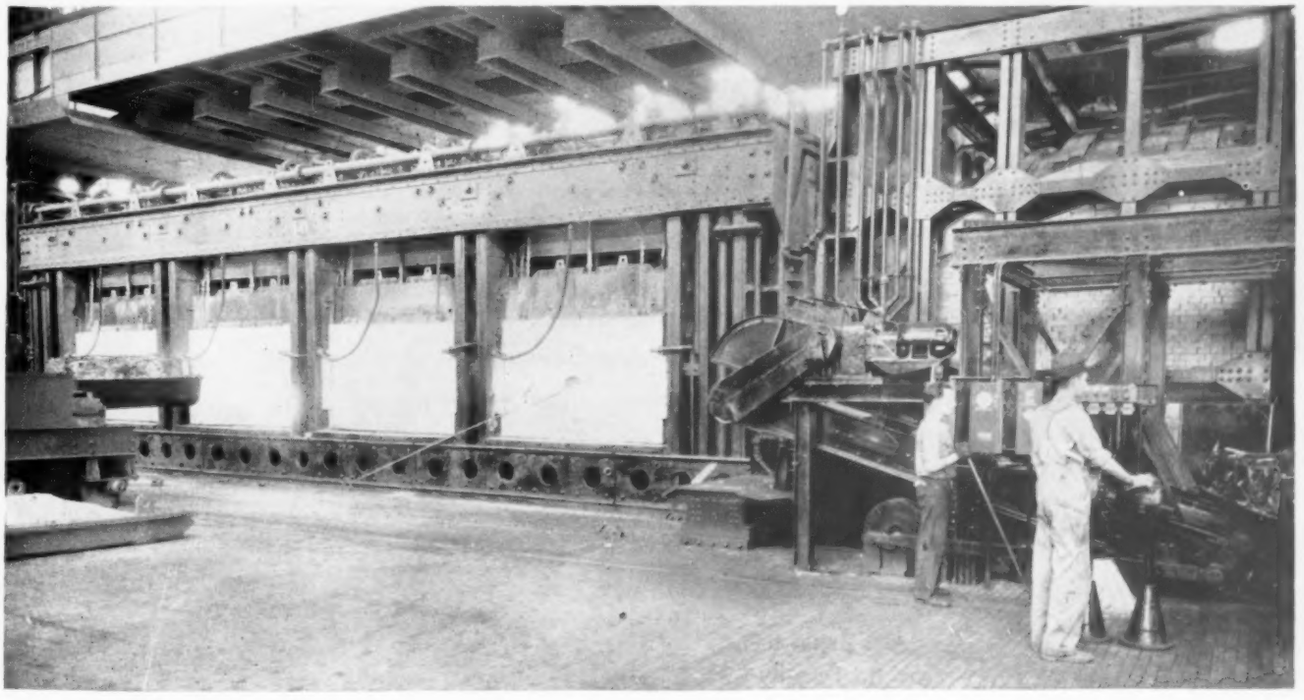
As previously stated, the disassembly plant has a capacity to dispose of 200 cars in 8 hours. On the line proper, from 37 to 39 men are employed, but including employes in co-ordinated departments handling fabric material, Model T motor disassembly, truck drivers transporting material to storage, and others engaged in salvage operations, a total of 111 are employed. The standard Ford wage scale is paid them.

Since the disassembly plan was first initiated early in 1930, a total of 72,623 cars has been scrapped and melted. From this number 36,311 tons of steel were recovered. More than 60 different makes of cars have been disposed of and among them besides many well-known and still made are such forgotten makes as Jeffery, Gray, Earl, Columbia, Apperson, Velie, Bay State, Dort, Case, Scripps-Booth, Jewett, Elgin, Briscoe, Saxon, Flint, K-R-I-T, Brush, E. M. F., Flanders, Regal, Lozier, Warren Detroit, Locomobile and Starr.

Form Metallizing Group Following Demonstration

To continue educational work on the spraying of metal by means of the gas-heated spray gun, the International Metallizing association has been organized with headquarters at 1218 Long Beach avenue, Los Angeles. The organization was effected in September following demonstrations before some 50 engineers by the Metallizing Co. of America, Los Angeles, developer of the process. Membership is open to those interested in the process.

Officers have been elected as follows: President, L. E. Kunkler; secretary-treasurer, R. S. Jensen; and chief research engineer, Charles Boyden. All are associated with the Metallizing Co. of America; Mr. Kunkler as president, Mr. Jensen as secretary, and Mr. Boyden as research engineer.



A view of the 400-ton open-hearth furnace from the charging floor. At the right is shown the conveyor by means of which the bales of scrap are transferred to charging boxes to be picked up by the charging machine at the left

TENNESSEE

STRUCTURAL STEEL

-in Power and Industrial Plants

Electric power is playing an ever-increasing part in the remarkable industrial development of the South and Southwest—and Tennessee Structural Steel is playing an ever-increasing part in the development of the power industry. Power and industrial plants in growing numbers owe their strength, their security, their fire-safeness and permanent value to "back-bones" of Tennessee Structural Steel.

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IMPROVING OPEN-HEARTH FURNACE DESIGN

By WILLIAM C. BUELL JR.

Part I Bottoms

Fourth Article of Series

ESTABLISHMENT of the combined resistance, R tentatively is the first step in the design of an open-hearth furnace bottom. Examination of Table VI indicates that the uninsulated bottoms have combined resistance 3.0 to 2.0 which indicates the temperature of the cooler surface to be 375 to 445 degrees Fahr. and an emission of from 820 to more than 1200 B.t.u. per square foot per hour. The combined resistance of the insulated bottoms ranges from 5.0 to 4.5. Within this range the outer temperature is 303 to 315 degrees Fahr and the emission 515 to 565 B.t.u.

How Resistance Is Increased

The limiting factor to the increase of the combined resistance has been shown as the temperature of the hotter surface of the insulation used to increase R and the maximum permissible temperature of this, as before stated, probably should not exceed 1800 degrees Fahr. Bottoms having a combined resistance 6.75 to 6.0, giving an outer surface temperature of 230 to 280 degrees Fahr. and an emission rate of 400 to 440 B.t.u. not only may, but, should, universally be used. Two courses are available for increasing the resistance: first, by increasing the overall thickness of the refractories, and, second, by using available materials to best advantage in the present depth.

With the steel bottom supporting structure at present universally incorporated in new construction there may, and, probably, will be, design limitations that make any considerable increase in refractory depth inconvenient. In addition, such an increase in depth is costly as is indicated by an examination of bottom V, in Tables V and VI, in which, granting a high R of 8.7, the total cost of $19.22 per square foot and per R of $2.21 is excessive and unwarranted. Excepting bottom V, the refractory depth of all other bottoms considered is within the limits, 30 to 44 inches, with the majority around 40 inches, as may be noted in Table V.

For the purpose of setting up designs that will meet the requirements of operating men, 11 bottoms have been developed, as shown in Fig. 8. These bottoms should be compared with those shown in Fig. 2. It will be seen that bottoms XA, XB, XC, XD, XE and XF, have a constant depth of 40 inches and progressing thickness of insulation displaces a similar thickness of firebrick. In bottoms XA, XG, XH, XI, XJ and XK, the thickness of the bottom to include the firebrick remains constant at 40 inches and the addition of insulation in thickness of from 1 to 4 inches increases the overall thickness of the bottom to the same amount, making the deepest bottom shown at 44 inches.

Thickness May Be Altered

In all of these bottoms, the thickness of the ground magnesite, and the chrome brick has been kept constant at 15 and 9 inches respectively, but these thicknesses in total may be varied a few inches in either direction without modifying the heat flow characteristics materially. However, any change in the firebrick or insulation will materially change heat flow conditions. One inch of firebrick has the heat retardent effect of approximately 3 inches of basic material. Magnesite and chrome brick may be used interchangeably without affecting heat flow conditions, but the substitution of magnesite brick increases the bottom cost. The temperature drops through a bath assumed as 27 inches deep with a 6-inch slag blanket shown in Fig. 8.

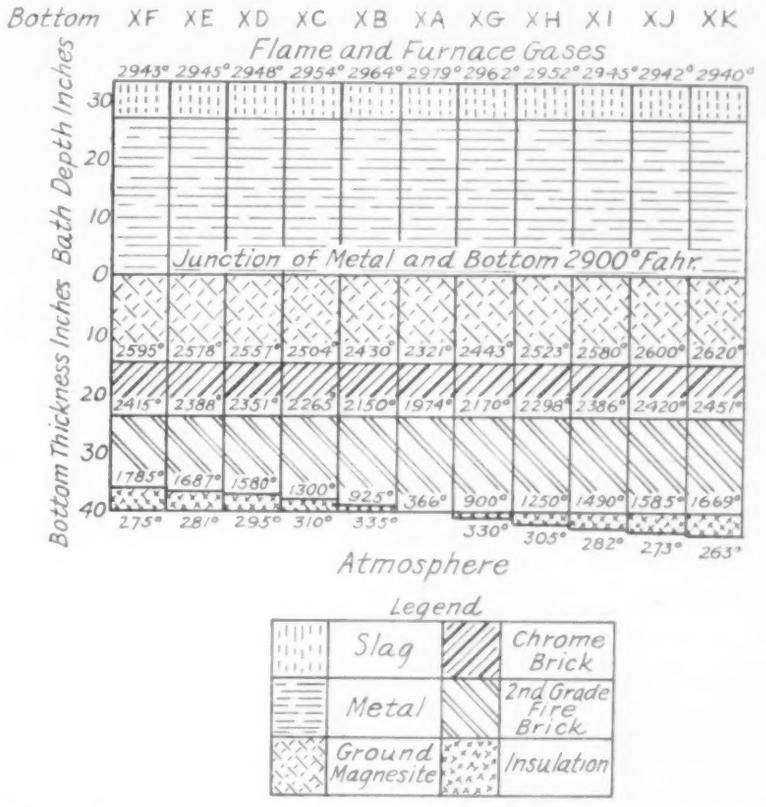

Fig. 8—Details of 11 open-hearth bottoms designed for a 27-inch bath and a 6-inch slag blanket

Table VII

Principal Data on Composite Bottom

Bottom	Total thickness refractory, inches	Total thickness basic, inches	Total thickness insulation, inches	Cost per square foot	Temp. of cooler surface, degrees Fahr.	B.t.u. per hour per sq. ft.	Combined resistance, *R*	Cost per *R*
Column Derivation	a. Fig. 8	b. Fig. 8	c. Fig. 8	d. Table VIII	e. Table VIII	f. Table VIII	g. Table VIII	h. *d/f*
XF	40	24	4	$11.88	275	425	6.252	$1.90
XE	40	24	3½	11.87	281	446	5.865	2.03
XD	40	24	3	11.86	295	480	5.477	2.17
XC	40	24	2	11.84	310	540	4.702	2.52
XB	40	24	1	11.82	335	640	3.927	3.01
XA	40	24	None	11.80	366	790	3.152	3.75
XG	41	24	1	11.98	330	618	4.052	2.96
XH	42	24	2	12.17	305	518	4.952	2.46
XI	43	24	3	12.35	282	450	5.852	2.11
XJ	43½	24	3½	12.44	273	442	6.303	1.97
XK	44	24	4	12.54	263	398	6.752	1.86

All data regarding these bottoms which have been developed in accordance with the methods previously described are given in Table VIII, and summarized in part Table VII for comparative use with Table V. These tables show that with bottoms of constant depth and an almost constant cost, such as those designated XA to XF, inclusive, the emission rate from the varying use of insulation ranges from 425 to 790 B.t.u. per square foot per hour, and the cost per *R* from $1.90 to $3.75. The comparison of these figures with those of Table V would seem to be an excellent exposition of good engineering vs. mediocre or no engineering.

As may be seen from Table VIII the maximum temperature to which the insulating material is subject is 1785 and 1669 degrees Fahr. in the cases of bottoms XF and XK, respectively. Incidentally, a few open-hearth bottoms with 4 inches of insulation have given satisfactory service for more than two years*, and, inasmuch, as the bottom otherwise was entirely conventional it seems reasonable to assume that temperature conditions are similar to those of the hypothetical bottoms and that 4 inches of insulating material may be used safely.

A rather high value as an average has been assigned in the text to insulating material and, accordingly, the actual temperatures likely will be somewhat lower than those given. Then, too, the temperatures shown in Table VIII are the highest that will be found in the materials under which they are tabulated.

Furnace bottoms, therefore, having a combined resistance, *R*, of 6.0 to 6.75 may be constructed safely in the present refractory depth at a cost lower both on a square foot and an *R* basis than the simple bottoms now generally in use. Moreover, a material saving in fuel through reduced heat flow will be accomplished; the bath at the same flame temperature will work hotter and faster through an increased temperature differential; and, both of these factors will react as another item of fuel cost reduction.

The foregoing calculations only give consideration to the flow of heat as entering the refractory through a plane surface of unit area and emitting from another plane surface of the same area after flowing through a refractory mass of varying composition and depth. As these calculations have considered the refractory at its least thickness, which consequently represents the most severe conditions, the methods described are entirely proper as a design basis. However, in order to further support the argument advanced that proper bottom design is essential, it is necessary that the cost of heat flowing through the various bottoms be calculated. In these computations it is essential that the effect of the entire radiating surface, which is much greater in area than the bath areas, be considered. The heat flow through the side and end

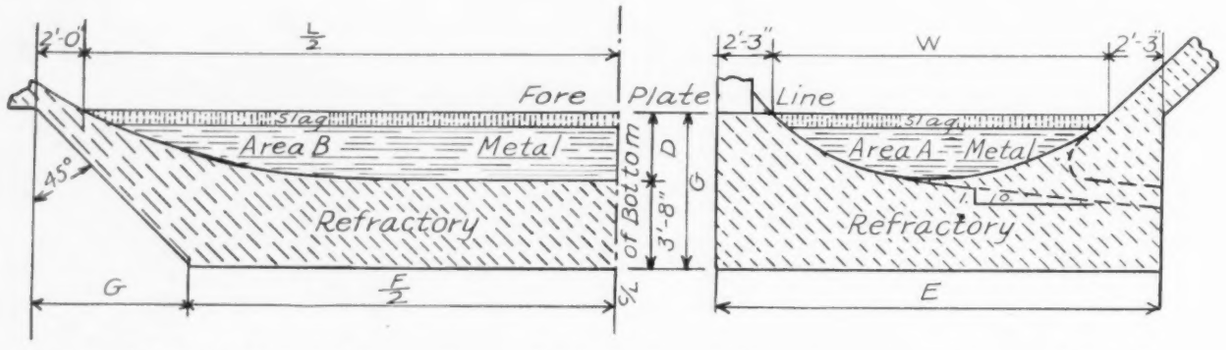

Fig. 9—Ideal bath and bottom sections. Further data and dimensions are presented in Table IX

Table

Complete Data on

Bottom	Ground Magnesite: Thickness, inches	Temp., °Fahr.	*r*3	Cost per sq. ft.	Chrome Brick*: Thickness, inches	Temp., °Fahr.	*r*4	Cost per sq. ft.	Fire Brick: Thickness, inches	Temp., °Fahr.	*r*5	Cost per sq. ft.
XF	15	2900	0.72	$6.16	9	2595	0.432	$3.70	12	2415	1.500	$1.28
XE	15	2900	0.72	6.16	9	2578	0.432	3.70	12½	2385	1.563	1.37
XD	15	2900	0.72	6.16	9	2557	0.432	3.70	13	2351	1.625	1.45
XC	15	2900	0.72	6.16	9	2504	0.432	3.70	14	2265	1.750	1.62
XB	15	2900	0.72	6.16	9	2430	0.432	3.70	15	2150	1.875	1.78
XA	15	2900	0.72	6.16	9	2321	0.432	3.70	16	1974	2.000	1.94
XG	15	2900	0.72	6.16	9	2443	0.432	3.70	16	2170	2.000	1.94
XH	15	2900	0.72	6.16	9	2523	0.432	3.70	16	2298	2.000	1.94
XI	15	2900	0.72	6.16	9	2580	0.432	3.70	16	2386	2.000	1.94
XJ	15	2900	0.72	6.16	9	2600	0.432	3.70	16	2420	2.000	1.94
XK	15	2900	0.72	6.16	9	2620	0.432	3.70	16	2451	2.000	1.94

*Changing 9 inches of chrome brick to 4½ inches of magnesite brick and 4½ inches of chrome brick will

*W. A. Miller; Minutes of fourteenth semiannual conference of the Open-Hearth Committee, American Institute of Mining and Metallurgical Engineers, page 11, Detroit, Nov. 24-25, 1931.

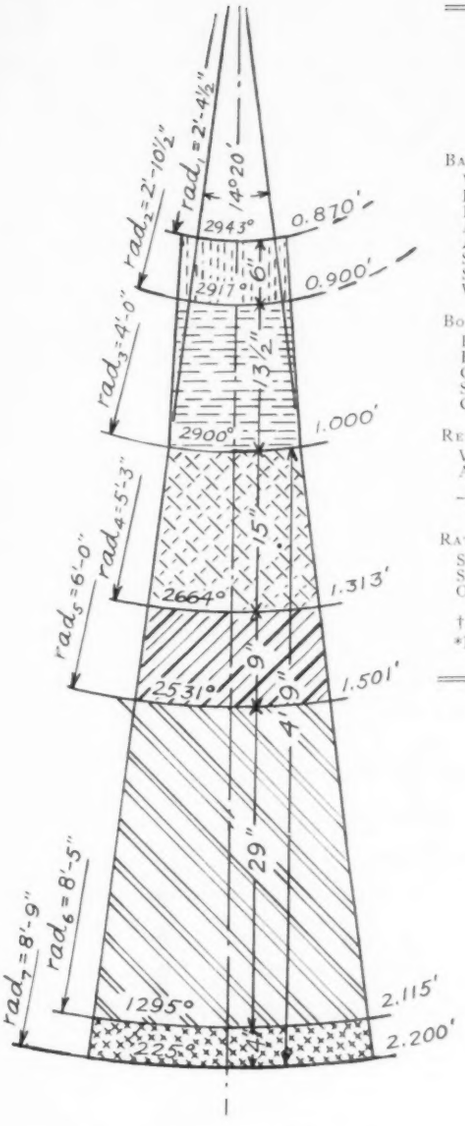

Fig. 10 — Details of median open-hearth bottom designated XK in Table VII and VIII

banks, therefore, must be brought into the calculation.

To properly develop this, an ideal furnace section is given in Fig. 9, and the principal dimensions as applying to furnaces of 100 to 350 tons capacity in Table IX. The bottom in each case is taken as having the characteristics of bottom XK. While the principal purpose of this table is to show the ratios between bath surfaces and outer surface, and to determine the average thickness of the refractory, all of the general dimensions of an ideal (ideal to the limit of our present knowledge of the practice) hearth and bottom are shown for furnaces of the listed tonnages.

Accordingly, mean refractory depths, column 16, and the ratios of columns 17 and 19, Table IX, are based on the surface of the ground magnesite being valued as 1.0. From column 16 it may be seen that the mean refractory depths are from 4 feet 2½ inches to 5 feet ½-inch. The average is taken at 4 feet 9 inches.

The average area of the surface of the bath at the foreplate, as will be seen from column 17, is nearly constant at the area of the surface of the metal and the ground magnesite at their junction. As compared to the area of the surface of the ground magnesite, the outer surface of the bottom at the junction of the refractory and the containing plate varies from 2.50 to 2.04, with an average value of 2.20.

In the following discussion the values of 0.87 for the upper surface of the bath, 1.0 for the surface of the junction of the metal and the ground magnesite, and 2.20 for the outer surface of the refractory will be used.

It will be shown that a calculation for a proper bottom construction based on 1 square foot of bath area, 1 square foot of ground magnesite surface, and 1 square foot of outer refractory surface is sufficiently correct for design. However, if the heat flow through the bottom is to be considered as a whole for calculating the total cost of the heat loss, then the method is incorrect, because effect must be given the ratio of the receiving and emitting surfaces. This appears to be most conveniently determined by considering the bottom as an annular ring, the length of the arc of the inner circumference being 1.0 and the length of the arc of the outer circumference 2.2, with an average refractory depth of 4¾ feet.

(To be continued)

Table IX

Certain Details of Ideal Baths and Bottoms

(Use with Fig. 9)

Furnace Rating†, tons	Line	100	150	200	250	300	350
BATH							
W (width), feet	2	12	14	16	18	19	20
L (length), feet	3	40	44	46	47½	49	50
D* (depth), inches	4	30	33	36	39	42	45
Area A, (transverse) sq. ft.	5	20.66	26.43	32.85	40.00	45.56	48.25
Area B, (longitudinal) sq. ft.	6	510	652	780	920	970	1060
Surface area at foreplate†, sq. ft.	7	450	570	680	785	855	915
Surface area at magnesite, sq. ft.	8	510	652	780	920	970	1060
Volume†, cu. ft.	9	500	700	900	1140	1390	1630
BOTTOM:							
E (W+4′-6″), ft.-in.	10	16-6	18-6	20-6	22-6	23-6	24-6
F (L+4′-0″-2G), ft.-in.	11	31-8	35-2	36-8	37-8	38-8	39-2
G (D+3′-8″), ft.-in.	12	6-2	6-5	6-8	6-11	7-2	7-5
Surface area, sq. ft.	13	1276	1495	1718	1907	2042	2167
Contained volume, cu. ft.	14	3845	4940	5915	6940	7720	8460
REFRACTORY							
Volume of refractory, cu. ft., (14-9)	15	3345	4240	5015	5800	6330	6830
Average depth of refractory, $\frac{15}{13}\times\frac{(1+2.2)}{2}$, ft.-in.	16	4-2½	4-6½	4-8	4-10½	4-11½	5-0½
RATIOS							
Surface of bath (7/8)	17	0.883	0.872	0.872	0.854	0.882	0.863
Surface of magnesite	18	1.0	1.0	1.0	1.0	1.0	1.0
Outer surface (13/8)	19	2.50	2.29	2.20	2.16	2.10	2.04

†By graphic methods.

*Includes an allowance of 6 inches for slag.

VIII

Comparative Bottom Design

Insulation Thickness, inches	Insulation Temp., °Fahr.	Insulation r6	Insulation Cost per sq. ft.	Total Thickness, inches	Total Temp., °Fahr.	Total R	Total Cost per sq. ft.	Emission B.t.u./sq. ft./hr.	Cost/R
4	1785	3.60	$0.74	40	275	6.262	$11.88	425	$1.90
3½	1687	3.15	0.64	40	281	5.865	11.87	446	2.03
3	1580	2.70	0.55	40	295	5.477	11.86	480	2.17
2	1300	1.80	0.37	40	310	4.702	11.84	540	2.52
1	925	0.90	0.18	40	335	3.927	11.82	640	3.01
...				40	366	3.152	11.80	790	3.75
1	900	0.90	0.18	41	330	4.052	11.98	618	2.96
2	1250	1.80	0.37	42	305	4.952	12.17	518	2.46
3	1490	2.70	0.55	43	282	5.852	12.35	450	2.11
3½	1585	3.15	0.64	43½	273	6.303	12.44	422	1.97
4	1669	3.60	0.74	44	263	6.752	12.54	398	1.86

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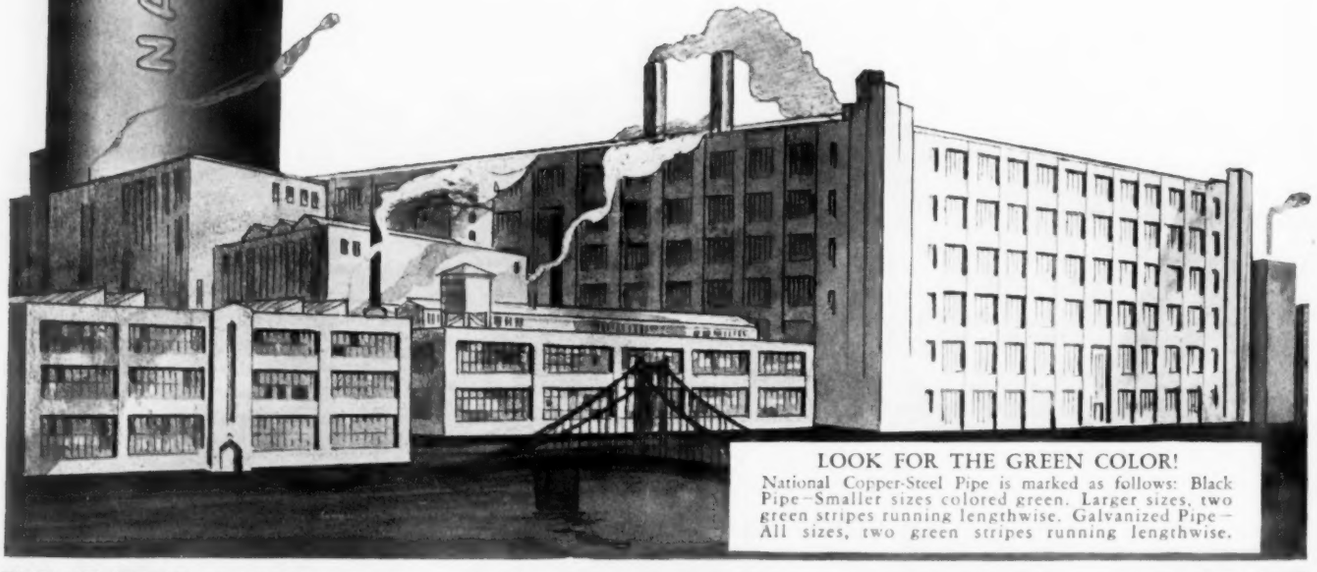

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Hope for Steel Construction Lies in New Markets

THROUGHOUT its existence the American Institute of Steel Construction has stressed the importance of new markets for structural steel. In accordance with this policy, discussion at the tenth annual convention at Hotel Schenley, Pittsburgh, dealt with this subject exhaustively.

C. G. Conley, Mt. Vernon Bridge Co., Mt. Vernon, O., declared that the older markets for steel construction may recover slowly, that new markets may promise relief. In past years, he said the principal markets for structlral steel were the railroads, industrial and office buildings and bridges. He pointed out that the day of railroad expansion is past and that the future need of structural steel by railroads will be largely for grade separation work, rebuilding of obsolete bridges and certain other replacement. The country is overbuilt as to industrial and office buildings and therefore consumption in these lines will be light for some time to come. In his opinion, owing to the fact that toll and other highway bridges must come out of taxes and the present tendency is to decrease taxes, consumption of steel for projects of this kind will be limited. In brief, he believes that tonnage from the usual sources will not return to former levels soon.

Sees Tonnage in New Uses

"Our markets of the future," he predicted, "will be partially made up of structures which are not now thought of. Large tonnages will be required in building elevated highways in cities and other congested places. Bridges will be built over ravines, streams, and rivers as population increases. Narrow bridges will be razed and wider ones built as traffic becomes denser. Hangars and airports with all the necessary buildings will have to be constructed, as well as the approaches to them. Seadromes undoubtedly will be built. Obsolete buildings which now occupy valuable real estate will necessarily have to be replaced by better buildings in order to produce enough revenue to pay taxes.

"I cannot subscribe in any way to statements that this country will not emerge from the present depression. It may take several years, but I firmly believe that we will come out of this depression a better and a stronger nation than ever before. When we do, the structural steel industry will profit because we are one of the essential industries of the country and when the country prospers we must prosper."

F. T. Llewellyn, consulting engineer, United States Steel Corp., New York, described the results of a survey made by the steel house committee of the corporation. The investigation covered 56 systems of construction which were classified into six groups as follows:

Rolled shapes as received from mill; rolled shapes fabricated into members; sheet or strip formed into members (metal lumber); rolled shapes, sheet or strip fabricated into panel framing units; sheet or strip fabricated into panel filling units; and miscellaneous and foreign practice.

An additional report of the proceedings of the tenth annual convention of the American Institute of Steel Construction will be found on pages 11 and 12.

According to the survey, the potential demand for one and two family houses in the United States is equivalent to 300,000 six-room residences per year. If these were framed of steel, 2,250,000 tons of small rolled steel shapes would be required annually. The fabrication of this material seems better suited to the smaller rather than the larger bridge shops. In some cases it may be done more advantageously at the building site.

A study of systems of steel framing that have been employed successfully, reveals the fact that their safe and economical design differs from conventional methods accepted in tier building design in three respects:

1. From the standpoint of mutual anchorage or support there is greater interdependence between the steel wall framing of a residence and the other materials which envelop the frame.

2. The scope of compression formulas now in use must be extended to greater ratios of slenderness in order to take care of temporary stud conditions during construction.

3. Greater attention to the limits of deflection in floor framing is required.

Mr. Llewellyn announced that the corporation is preparing a guide book to house builders which will contain rules, tables and illustrative examples that will facilitate a proper provision for these three features in the design of steel framed houses.

T. J. Foster, chairman, National Bridge Works, New York, in a paper read in his absence, spoke of the opportunity for steel construction in apartments. An apartment house is not a new medium for steel, he said, but in the city of New York only 3 per cent of the apartment buildings are fireproof. "Is it worthwhile," he asked, "for the steel industry to go after the other 97 per cent?"

According to Mr. Foster there are 860,000 residence units in apartments in New York City. The average annual requirement for the past ten years has been 45,619 units. At $5000 per unit it may be said conservatively that the potential annual requirement is $225,000,000. If this were built of noncombustible materials, about 40 per cent of which would be in steel, the annual requirement would be about $40,000,000 which at $70 per ton would amount to about 570,000 tons.

Mr. Foster declared that proper merchandising will develop new markets and extend old ones. "Let us destroy the tradition that has made the steel industry solely a manufacturing agency and apply to merchandising as sensible co-ordination as is used in manufacturing. Our industry must be wisely planned from the time the ore is taken from the ground to the time the finished steel is in its appointed place.

More Steel Bridge Floors Used

J. G. Shryock, chief engineer, Belmont Iron Works, Philadelphia, declared that steel floors, especially in the construction of bridges, are being used in increasing quantity. He described a number of interesting recent installations of the "Belmont" interlocking floor made of standard channels and covered with wearing surfaces. The wearing surfaces recommended by the Belmont company are preformed mineral asphalt bridge planks as manufactured by the Johns-Manville Corp., New York, or rubberized Amiesite as manufactured by the Pacific Amiesite Inc., Seattle, Wash. Mr. Shryock explained numerous features of tests on Belmont panels and also described a number of installations of this interlocking floor on piers and highway spans.

Dr. J. H. Young, vice president, H. H. Robertson Co., Pittsburgh, described the design and application of the keystone beam steel floor developed by the Robertson company. He explained that the beam steel floor was a development arising out of the problem of providing a suit-

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able roof covering for the Goodyear airship dock at Akron, O. The standard corrugation of the sheets usually employed for ordinary building construction did not provide sufficient strength for this building.

Consequently the H. H. Robertson Co. developed a deep V-shaped corrugation of its protected metal which was more than adequate in strength. This successful installation led to further development work with the result that the present form of keystone beam steel floor was evolved. Each unit is built by preforming two steel sheets and subsequent welding them together in the plane above the neutral axis. As delivered to the job the unit either is two cells (12 inches wide), or four cells (24 inches wide), the cell possessing a great deal more strength than is needed for many load and span conditions. It is adaptable for all general floor construction.

Dr. Young mentioned various advantages of this type of construction, dealing particularly with the ease with which electric conduits, pipe and other services in buildings are accommodated by the cellular construction.

F. H. Frankland, director of engineering service, American Institute of Steel Construction, spoke briefly on the progress being made in the fireproofing, strength and sound conductivity tests being made by the United States bureau of standards, Washington.

R. A. Marble, engineer, Carnegie Steel Co., Pittsburgh, described the T-Tri-Lok type of floor developed by the Carnegie company. This construction was described and illustrated on page 38 of the Oct. 26, 1931, issue of STEEL. Bennett Chapple, vice president, American Rolling Mill Co., Middletown, O., spoke on frameless steel residences, dealing particularly with the recently completed house at Solon, O., which has been described in recent issue of this publication.

Structural Steel Fabricating Industry Girds for Reconstruction Period

(*Concluded from page* 12)

Co., Decatur, Ill., declared that in spite of the present suicidal competition and other evils, the independent fabricator will find an active field of usefulness as soon as the depression is over.

Mill fabricating plants, he said, have been accused of tendering bids in which costs of fabrication have been largely eliminated to make a sale of plain structural steel.

"This has led to the belief in some quarters that it is the purpose of the mills to put the independent fabricator out of business," he said. "I do not believe this is true, but if true I do not believe it can be accomplished. There is a place for the mill fabricator, but just as surely there is a definite place for the efficient and well located independent fabricator.

Steel Essential to Civilization

"There is a definite challenge to all who expect to continue in the fabricating business in the future. The opportunity for success will be awaiting those deserving it, just as in the past. Steel will continue to be essential to the advance of civilization. However, structural steel needs the mind and the hand of man to form it for man's use. That will be our job and we must equip ourselves to do it."

H. B. Hirsh, Belmont Iron Works, Philadelphia, presented a fascinating study of costs involved in a ton of structural steel. The average price is $55 to $60 per ton erected in place. Of that sum, $10 to $14 goes for erection, insurance, etc., leaving available $45 to $50 for fabricated material on cars at destination. Out of this the fabricator pays $35 or $36 to the mill for plain material delivered to his shop. This leaves only $10 to $14 to the fabricator for all of his operations.

More Margin Needed

Mr. Hirsh went into the details of fabricating costs, overhead, selling, etc., proving that the $10 to $14 margin is only about half of what is required to cover minimum needs.

"Continuation of selling that ton on that basis means quick economic chaos and ruin," he warned, and added that the destructive results extend all the way from the investors in buildings back to the mines from which the raw material is obtained.

Certain advantages of the small fabricating shops were enumerated in a paper prepared by J. L. Kimbrough, Indiana Bridge Co., Muncie, Ind. In his opinion the smaller unit is going to enjoy a greater proportionate development than the larger units. Management of the smaller shop is a simpler problem than that of a large fabricating organization. Small operators may continue to enjoy this enviable position if they will studiously avoid growing pains.

An interesting feature of the Thursday afternoon session was a free-for-all discussion of internal problems of the industry. Stanley Macomber, Macomber Steel Co., Canton, O., pressed for greater activity on the part of the institute in the matter of fireproofing structural steel.

J. Lehman, Republic Structural Iron Works, Cleveland, raised several questions, including that of a more detailed definition of structural steel, clarity on the fabrication-in-transit problem, the cost of compensation insurance and specifications covering the bolting and welding of structural steel.

Debate Abuses by Contractors

R. L. Kift, Lehigh Structural Steel Co., Allentown, Pa., introduced the subject of the behavior of some bonding companies, stating that their tactics in dealing with plaintiffs are open to question.

This led to a discussion of abuses by general contractors, which prompted R. I. Ingalls, Ingalls Iron Works, Birmingham, Ala., to propose a resolution endorsing the Goss-Bingham bill, which provides that a contractor must list the subcontractors on a project. This resolution was adopted.

One speaker declared that anyone has a right to sell at any price—even $1 a ton—providing he is willing to pay the penalty, which would be bankruptcy. H. B. Hirsh, Belmont Iron Works, promptly arose to this challenge, and declared that such action visits penalties on competitors and that no business man has a right to jeopardize an entire industry in that way. He was supported in this view by W. B. Truitt, Carolina Steel & Iron Co., Greensboro, N. C., and many others.

D. H. Wood, Converse Bridge & Steel Co., Chattanooga, Tenn., said that fabrication-in-transit, like the tariff, is a local problem. H. A. Fitch, Kansas City Structural Steel Co., Kansas City, Mo., expressed the belief that forces now in progress may succeed in working out a solution of some of the bad features of fabrication-in-transit.

Others who participiated in the general discussion were N. R. Patterson, Patterson Steel Co., Tulsa, Okla.; W. F. Barnes, St. Louis Structural Steel Co., East St. Louis, Ill.; and R. W. Robberson, J. B. Klein Iron & Foundry Co., Oklahoma City, Okla.

The annual banquet was held Thursday evening, President Charles N. Fitts presiding as toastmaster. The principal speakers were Howard A. Fitch, Kansas City Structural Steel Co., Kansas City, Mo., and Col. W. F. Chevalier, McGraw-Hill Phblishing Co., New York.

Rebuilding Historic Church Tower on a Steel Frame

BOSTON'S "Leaning tower of Pisa," the architecturally beautiful spire of the historic Old South church, threatened with destruction by crumbling masonry and for many years leaning dangerously over Boylston street, is being rescued by steel and engineering genius.

Although this country is still young, some of the historic structures in the older cities and towns of the eastern seaboard are showing signs of age, and steel is being utilized to allow a new lease on life and to warrant continued existence with safety. St. Paul's chapel, New York, where George Washington worshipped, recently was renovated with steel ribs here and there to prevent possible collapse and continued disintegration.

The tower of the Old South church was leaning at the southeast corner 35 inches and apparently becoming more dangerous each year. Within a few feet of its foundation, trains of the Boylston street subway vibrated and shook the structure every minute. The massive organ's vibration also was a factor. The original tower was of solid masonry walls set in lime mortar and the foundation rested on a thin strata of clay through the medium of heavy granite footings and wooden piles, overloading the substrata.

Several plans for reinforcing the leaning tower with steel were studied but deterioration of the walls caused by the severe settlement had progressed to such an extent as to make such plans impractical. Finally the problem was submitted to the Casper Ranger Construction Co., Boston and Holyoke, Mass., and its engineers decided to wreck the tower carefully, saving the face stone, and to rebuild the tower in replica of the old architectural masterpiece, substituting a steel frame and thereby lightening the load on the foundations nearly 50 per cent. This is now being done.

Foundation Steel Heavy

One of the accompanying illustrations shows the tower before wrecking and as it will ultimately appear again. The other shows construction work on the lower section of the tower with the frame rising, the steel fabrication and erection being handled by the New England Structural Co., Boston.

Foundation steel is unusually heavy in the new tower frame, there being four 40-ton base girders on a 40-ton concrete base mat to spread the load. Proximity of the subway tunnel had a paramount influence in planning the engineering details, there being a jacking system and a 7-inch diameter soft steel ball plate between the billet and column base which will spread under the load evenly and prevent any list. The old tower was 232 feet high, but for the present the construction will be carried up only part of the distance, although ultimately, or as soon as funds are more free, the spire will be carried to its full height.

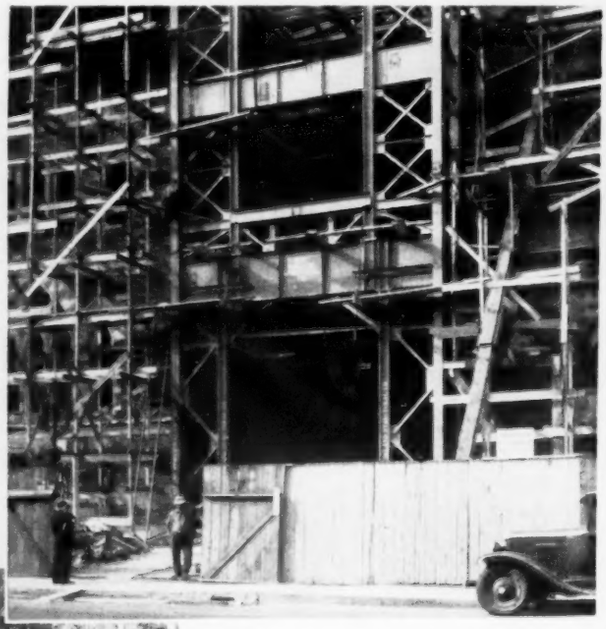
The old masonry tower weighed 5440 tons while the new tower with steel frame, will weigh 3140 tons Masonry walls in the old tower were four feet thick in spots, yet were found badly shattered. When the job is completed, close to 1100 tons of steel will have been placed, the erection being by riveted construction. About 250 tons already have been set during the present contract.

Braced Against Wind

Steel above the foundation footings is made up of small sections for the most part, mostly 4½-inch, wind braced in all directions. The steel will also be mastic covered.

The Old South church is one of Boston's historic shrines. The present structure is not the original one of the days of the revolution, but is well over a half century old and the third in the history of the parish. It was at the Old South church that the plan for the famous Boston tea party was hatched and the present building and its predecessors have played a prominent part in the history of the Bay state and the nation.

OLD South church tower, Boston, now being rebuilt



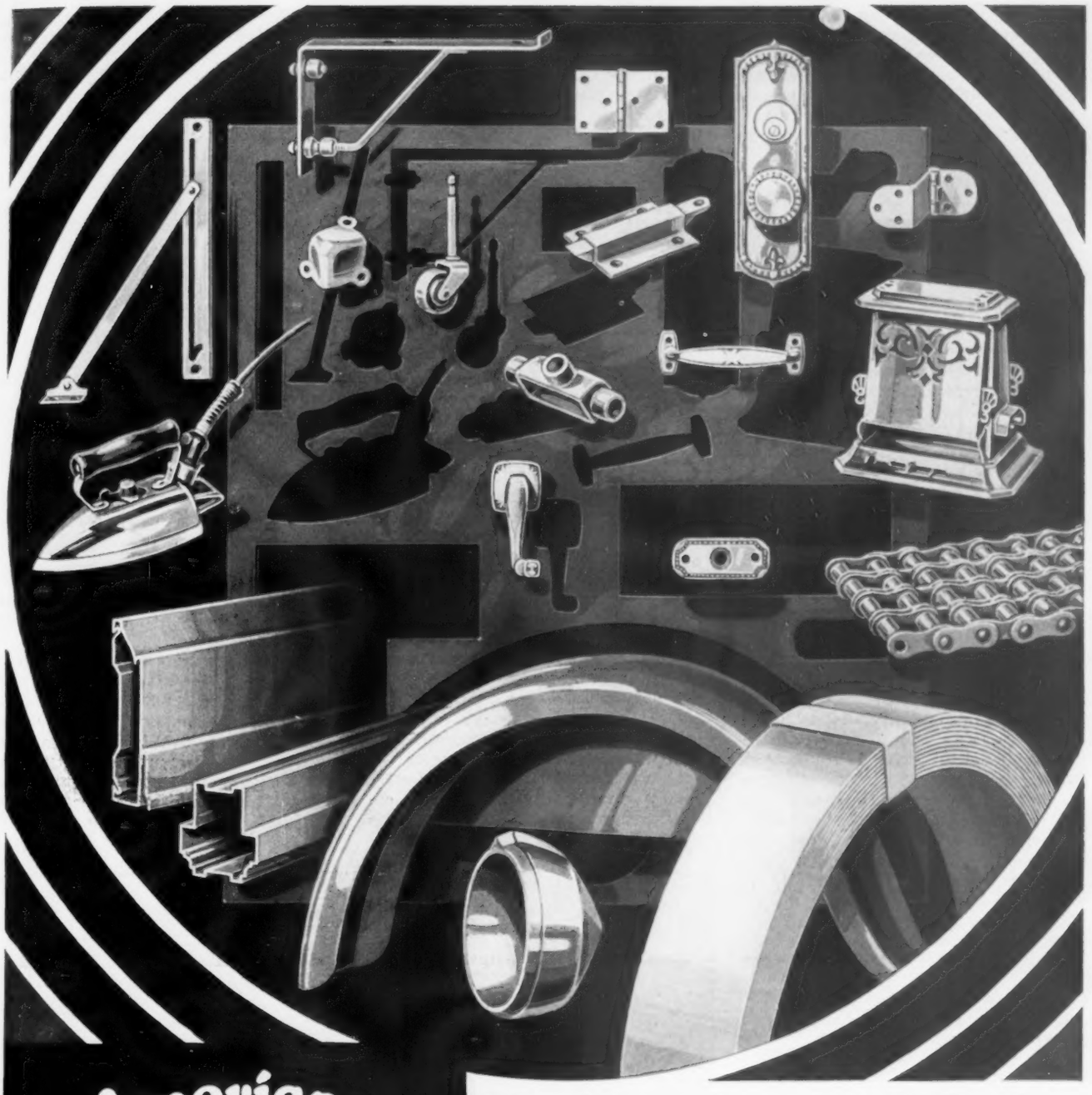
SOME 1100 tons of heavy structural steel will be required for the tower frame. Above is shown the construction work for the lower section.

Gas Association Reviews Research Work of Year

Research and development in nine fields of industrial gas utilization have been pursued actively during the past year by the committee on industrial gas research of the American Gas association, 420 Lexington avenue, New York. The annual report of this committee has been prepared in the form of an 18-page booklet entitled "Preparing Industriai Gas Technique To Carry a Greater Share of the Industrial Heating Load."

In some instances, the projects represent fundamental studies of problems applying to a wide variety of industrial gas applications; in others, they are confined almost wholly to projecting the results of present and past research into practical application and into full scale equipment operating under field conditions regularly met in practice.

Among the subjects reviewed briefly in the report are the following: Application of heat to ceramic firing; research in elimination of



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noises in industrial gas burners; a study of the characteristics of burning gas with preheated air; development of gas-operated house cooling and summer air-conditioning equipment; development of rotary brass melters; research in factors affecting short-cycle malleablizing; research in scaling at heat treating temperatures; research in fundamentals of combustion space requirements in high-temperature furnaces; and nomenclature for industrial gas combustion systems.

Equips New Electroplating Laboratory To Investigate Coatings for Zinc

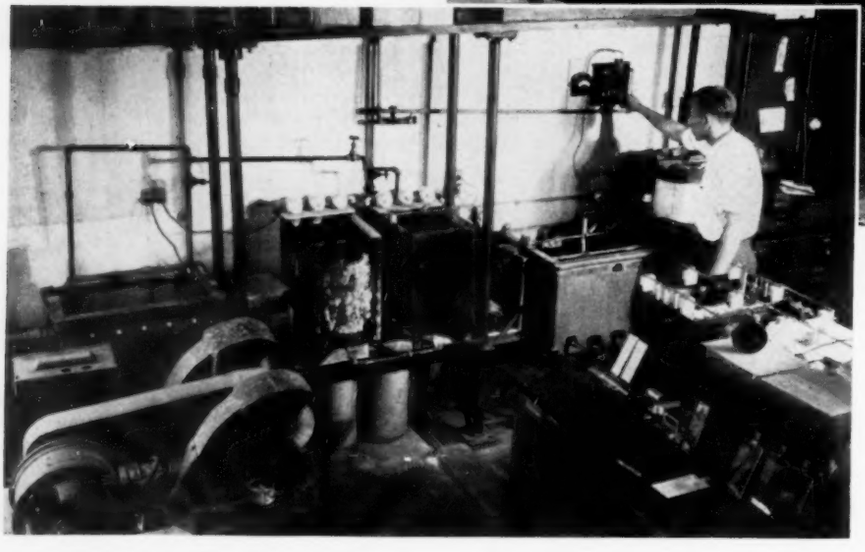
ZINC, the least expensive of the nonferrous metals, is formed easily and is adapted to most of the usual methods of manufacture. Industry is making increased use of rolled zinc and zinc die castings in its products, and for this reason one of the country's leading zinc manufacturers has been conducting important studies to determine the simplest and most economical methods for plating this metal.

Test Solutions, Densities

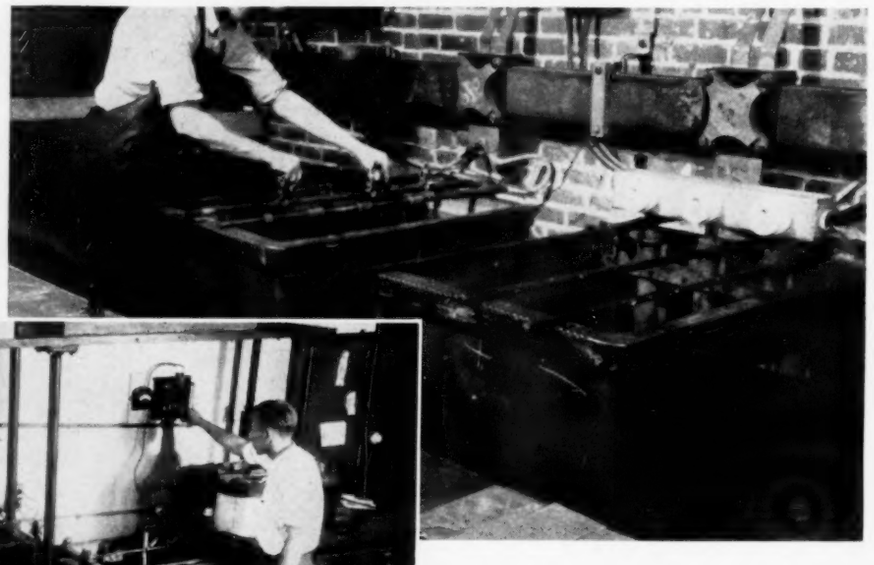
For several years, the New Jersey Zinc Co., 160 Front street, New York, has engaged actively in electroplating research in its laboratories in Palmerton, Pa. In the experimental laboratory shown at the lower left in the accompanying illustration, the plating solutions and current densities recommended for commercial use have been worked out, and here many hundreds of samples have been plated with various types of metal coatings, including nickel, nickel-chrome, chromium direct, copper, brass, bronze, cadmium, silver, gold and platinum, to determine the proper plating method and to prepare samples for various aging and service tests.

As the work in co-operation with several industries has expanded, the company has found it necessary to add new equipment continually. Until the present, this equipment has been of the laboratory type. Within the past six months, however, the existing facilities have been augmented greatly by the addition of tanks and generator unit of semicommercial size, as shown in the upper right illustration. These new laboratories will enable the company to develop and demonstrate on a practical scale various procedures for electroplating rolled zinc and zinc die castings.

Work which has been done in the original laboratories, together with the information received through co-operative runs in industrial plants has been thoroughly reported in papers delivered before technical societies and published in industrial journals. A research bulletin, "The Plating of Rolled Zinc and Zinc Die Castings," published by the New Jersey Zinc Co. to broadcast the result of this work, is considered to be one of the standard reference works on the subject.



Below is shown the experimental laboratory of the New Jersey Zinc Co. in which research on the plating of rolled zinc and zinc die castings has been conducted



With a need for expansion of facilities, the company recently installed additional equipment including a generator unit and tanks of semicommercial size as shown above

Tests of Gear Hardening By Salt Bath Reported

American Cyanamid & Chemical 535 Fifth avenue, New York, has issued a 4-page bulletin entitled "How One Manufacturer Improved Quality and Cut Costs by Using Aerocase for Heating Medium Carbon Alloy Steel." This bulletin describes in some detail tests which a large manufacturer of automotive transmissions made on these steels using the company's Aerocase process for hardening in a liquid bath.

In commenting upon the results, the bulletin states that the remarkable resistance to wear and fatigue, coupled with high impact value, shown by gears of medium carbon alloy steel treated in the bath is attributed to the nature and composition of the case produced. The process as used for this type of work is said to produce a case in which carbon is predominant in the carbon-nitrogen ratio. It is this carbon-nitrogen ratio which determines the ability of the case to resist pitting action and fatigue failure. The higher the nitrogen content, the more susceptible is the case to pitting and fatigue failure. This condition is understood to be induced by brittleness of the iron nitrides present.

Making the Most of

METHODS AND MATERIALS

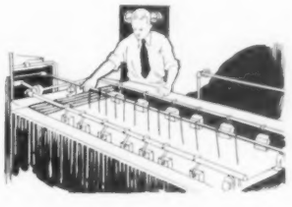
TWO European investigators have found that best magnetic properties were developed in a steel containing 1.3 per cent carbon and 2.1 per cent chromium when it was hardened in oil from 850 degrees Cent. They reported that the steel should not be held too long at temperatures between 750 and 850 degrees Cent., as in that range the magnetic properties are impaired seriously, pobably because of changes in the chromium double carbide constituent. Steel spoiled by incorrect heat treatment should be heated to between 950 and 1000 degrees Cent., soaked at this temperature for from 30 to 60 minutes, and then rehardened in the usual way. If the steel is overheated during this normalizing process, it must be reheated to 150 to 250 degrees Cent. before hardening. The results of the investigation confirmed earlier work in that there is no definite connection between hardness and coercive force.

\$ \$ \$

When worked into wire, 18-8 chrome-nickel steel is held within closer chemical specifications. The customary analysis is as follows: Carbon 0.07 maximum, manganese 0.30 to 0.50, phosphorus and sulphur 0.025, silicon 0.20 to 0.40, chromium 17.00 to 18.00, and nickel 9.00 to 10.00 per cent. Carbon and silicon have some influence on the physical properties of the wire, more so in proportion than manganese, chromium and nickel. Higher carbon and silicon wire will show a little higher tensile strength. Silicon much over 0.50 per cent is likely to cause embrittlement or fatigue failure when the material is hard drawn.

\$ \$ \$

During a visit to a state military academy, a Southwestern welding shop proprietor noticed that the furniture in some of the cadets' rooms, although fairly new, was badly scarred due to the cadets' frequent shoe shining operations. This was a matter of importance to the academy's maintenance department because refinishing furniture was an item of expense, consequently the welding shop proprietor decided he could save the institute money by selling them individual shoe boxes, not only to keep the shoe shining equipment out of sight but to use as a convenient foot rest. Subsequently a steel shoe box and foot rest 5 by 15 inches at the base and 16 inches high was designed and fabricated by oxyacetylene welding. High test steel welding rod was used to form the base for the box, as well as for welding all joints. A swinging door of 12-gage was designed as part of the box. The sample box was submitted to the commandant and as a result 200 boxes were ordered at once with an immediate prospect of an increase in the order. The price at which these boxes could be sold was satisfactory to everyone concerned.



CONSIDERABLE private activity has been going on in the chromium plating of cutting tools and some remarkable results in production life have been reported. One serious drawback to general adoption of plating for this purpose has been the lack of proper facilities. Some of the larger automotive plants have their own electroplating equipment, but hundreds of the smaller plants are not so fortunate. However, practically every large city now has at least one commercial electroplating plant with complete facilities and the specialized knowledge so essential to successful plating. At some time in the near future we may expect to see on the market a small, compact electroplating machine complete in all respects and specially designed for the toolroom or tool crib. When this happens, electroplating will be within the reach of the smallest machine shop.

\$ \$ \$

Bureau of standard service tests show that tin-base bearing alloys have higher wear resistance than hardened lead or the lead-tin-antimony types of alloys containing about 3 per cent tin.

\$ \$ \$

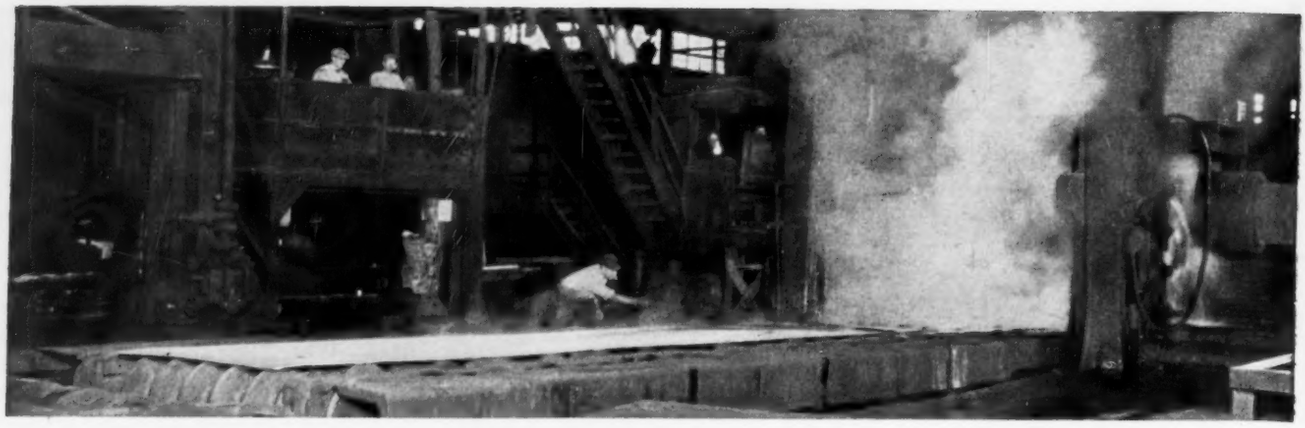
Rattling of stock in the steady rests of automatic screw machines may be an annoying source of noise. One manufacturer has solved this problem with the design of a device consisting of a length of rubber tubing inserted in an outer steel pipe and cemented in position in the steady rest. A coil of flat steel wire is molded in the rubber.

\$ \$ \$

Short runs are costly, but unavoidable so long as industry indulges in ordering specialties. A manufacturer found he had in storage five different cylindrical pins of the same nominal size. Only one lot had been made in the most economical way—on an automatic machine. The cost of another lot was 400 per cent higher simply because no one was keeping record of matters which are relatively simple.

\$ \$ \$

An improved method of mounting a heavy-duty air compressor on a caterpillar tractor without in any way interfering with the drawbar work of the tractor has been developed by a manufacturer of tractors and a manufacturer of air compressors. The tractor is standard except for the specially-designed mounting bracket and platform and the power takeoff. The two 4-cylinder air compressors mounted tandem are largely of aluminum and weigh only 725 pounds each. Combined they have an air displacement of 640 feet per minute. A 4-inch diameter heat treated chrome-nickel steel shaft 94½ inches long, extending through the tractor frame and fitting into the track frame at either side, serves to carry the deadweight of the compressors and to relieve the tractor transmission case of strain caused by the superimposed load.



PROGRESS IN STEELMAKING

INTERNAL lubrication of wire rope is effected by a maker near the Chicago district by the use of a grease stuffing device. The unheated lubricant is applied in a heavy film during the stranding operation, covers the entire surface of each wire and stuffs all voids. The machine is located below the wires of the strand and all excess grease is wiped off just after the strand passes out of the closing die. Since the installation of this device the average life of the closing dies has been increased 20 times.

RUST and corrosion-resistant paint now is available for coating condensers, fresh and cold water tanks, pumps, engine jackets, boiler fronts, sweating pipes, etc., around steel plants. The coating serves as a preventative for steel which is exposed to moisture under 125 degrees Fahr., hot dry gases up to 450 degrees Fahr., or atmospheres under shelter. It is highly resistant to the action of cold, fresh or salt water; acid fumes; acid and alkali solutions of moderate strength; and, prevents galvanic action.

♦ ♦ ♦

Cost of cleaning windows at a tin mill in the Pittsburgh district has been reduced from $1.69 to $0.19 per 100 square feet by a motor-driven sprayer which eradicates the dirt eight to 12 times faster than is possible manually.

♦ ♦ ♦

Application of a thin layer of hard facing alloy to both edges of shear blades used to cut stainless steel sheets to customer specifications has reduced wear to a minimum and eliminated the frequent replacement of knives which formerly was necessary when this grade of steel was cut with untreated blades. Little wear of the hard faced blades, which have been in service 2 hours a day for over 2 years, is perceptible.

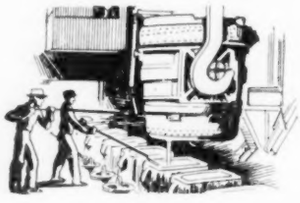
♦ ♦ ♦

Basic open-hearth steel containing 3 per cent chromium has been found highly suitable for rails on account of the wear-resisting quality, according to tests covering a 2-year period. When subjected to the drop test the hot-rolled specimen is difficult to break even when nicked. While the deflection is not as marked as in medium manganese steel, the elongation is higher. Chromium alloy rails compared with manganese steel sections, show higher ductility between supports and more uniform resistance to cross bending.

♦ ♦ ♦

Equipping the supply reel with a back-tension generator has eliminated cobbles and buckles in strip steel being fed to a cold mill where the desired reduction is effected before the stock is fed through the tin bath.

OPERATION of seamless tube annealing furnaces at temperatures varying from 450 to 1650 degrees Fahr. without any manual readjustment of burner valves or controls is accomplished at a plant near Pittsburgh by an ingenious method. The furnace is built with four longitudinal zones, each separately controlled by a recording controller of the potentiometer type. The instrument on each zone controls two 3-position valves which regulate different groups of high-pressure, automatic proportional, mixing-type burners within the zone. When high temperature is desired, both groups of burners are used; when an intermediate temperature is required, the 3-position valves regulate both groups of burners; and when annealing at low temperature, only one group of burners is used. Thus by resetting the dials on the controllers the furnace can be operated at any desired temperature.



WALL thickness has more bearing on the life of ingot molds than on the quality of the ingot, according to a manufacturer. In general, molds that have heavy walls or a rather high ratio of mold to ingot are more desirable for both ingot and mold.

♦ ♦ ♦

Destruction of steel mill tracings when filing or refiling is prevented by a semiautomatic lifter attached to the shallow drawers of the filing cabinet. The lifter raises the upper sheets, thus removing the pressure from the tracing desired and preventing tearing or crumpling of the plans.

♦ ♦ ♦

Either a light or heavy blow or a short or long stroke without delay now is possible in forging practice by the recent development of a variable-stroke board drop hammer. The unit is treadled in the usual manner with one foot, the length of the stroke being governed by a slight rocking of the foot on the treadle.

NEW EQUIPMENT

PRODUCTION FABRICATION TREATMENT FINISHING

Shunt Inductor Principle Employed in Welder

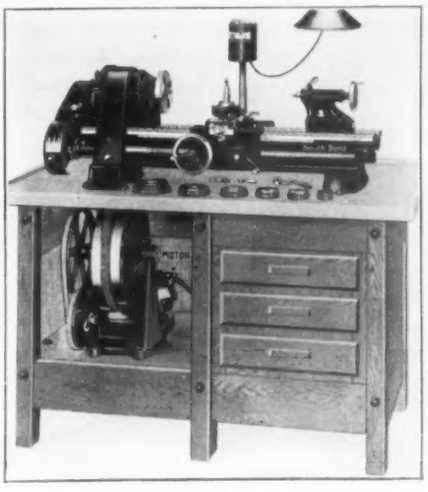
Universal Power Corp., 12367 Euclid avenue, Cleveland, in developing a new Ford V-8 motor-driven, 300-ampere arc welder of high-speed portable trailer type, has employed the shunt inductor principle for arc stabilization, similar to that used in its motor generator sets. The combination of the shunt inductor coupled with the smooth flow of power of the motor, has effected gas-driven arc welder performance of unusual stability and flexibility.

The shunt inductor principle is claimed to be a radical departure in the arc welding machine field. Universal high-speed road trailer arc welders have many other features contributing to their usefulness. Novel mounting of the horizontal radiator directly over the engine, with blower type fan, materially effects the cooling of the entire unit. A sliding cover over the radiator allows for proper amount of radiation and cooling regardless of temperature conditions. The accompanying illustration shows the high-speed trailer arc welder ready for transporting.

◆

New Type Drive Features Bench Lathe

South Bend Lathe Works, 426 East Madison street, South Bend, Ind., has announced the development of an underneath belt motor drive bench lathe. Drive for this unit, shown herewith, is by belt from a reversing motor mounted under the bench, directly beneath the headstock of the lathe. Because of its compactness, convenience and safety, this bench lathe is practical equipment for engineering, experimental, repair and general machine shops. It is of back-geared, screw-cutting type available



Underneath drive bench lathe designed by South Bend Lathe Works

in 8, 9 and 11-inch swing size and will cut all standard screw threads, right and left hand from 2 to 90 per inch, including 11½ pipe thread. In addition to machining all kinds of metals, this lathe can be used for turning wood, hard rubber, and compositions.

Another new feature of this lathe is an easy-reading index plate which shows at a glance the proper gearing to obtain any desired tool feed in the wide range provided. The unit has six spindle speeds, drum-type reversing switch, graduated tailstock spindle, automatic feeds, and precision lead screw. Belt guard for the cone pulley is optional.

◆

Designs Line of Motorized Speed Reducers

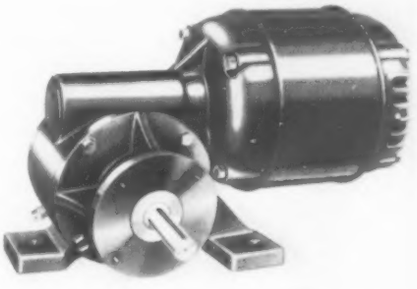
Jannette Mfg. Co., Chicago, has developed a line of motorized speed reducers incorporating standard ball bearing motors built integral with worm gear reduction units in such a way that the end frame of the motor is a part of the gear housing, the worm being keyed to the motor shaft extension.

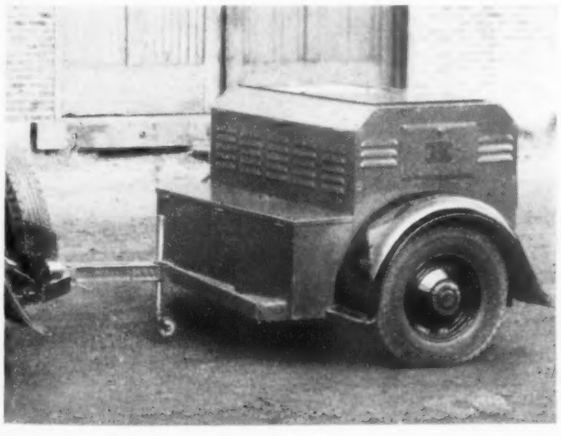
Designated type SW-2, the unit which is shown herewith, is built in 12 standard ratios ranging from 90:1 to 8:1, although intermediate ratios and ratios up to 120:1 may be obtained. Motors of 1/6 to 1 horsepower are available. Standard motor speeds are 1725 and 1140 revolutions per minute.

◆

Flexible Coupling Composed Of Three Parts

D. O. James Mfg. Co., 1114 West Monroe street, Chicago recently de-

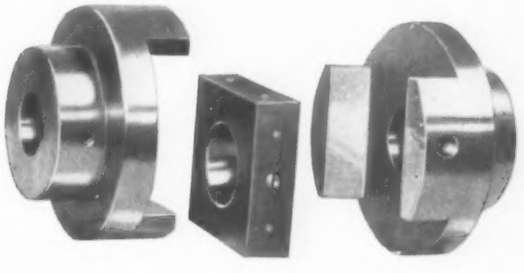


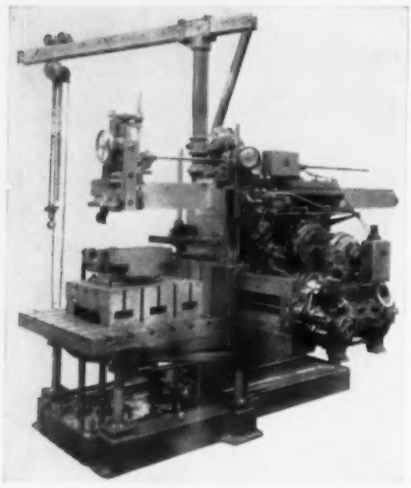


Right, above—Jannette motorized reduction unit built in 12 ratios

Left—Trailer type arc welder made by Universal Power Corp.

Below—D. O. James flexible coupling consisting of three parts





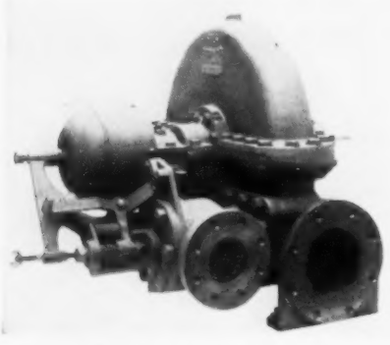
Morton high-duty draw-cut shaper incorporates a special head

veloped a flexible coupling of simple construction and composed of only three parts, as shown in the illustration on page 41. The center member is made of nonmetallic material self-lubricated by means of a reservoir within itself. This floating center member slides between the jaws of one metal flange on a line passing through the center. It is free to slide across face of second flange in a direction which is at right angles to the first making it mechanically flexible without the use of flexible material.

◆

Turbine Has Two Rows of Revolving Buckets

General Electric Co., Schenectady, N. Y., recently developed a mechanical drive, noncondensing steam turbine for driving centrifugal pumps,



General Electric noncondensing steam turbine designated type D-59

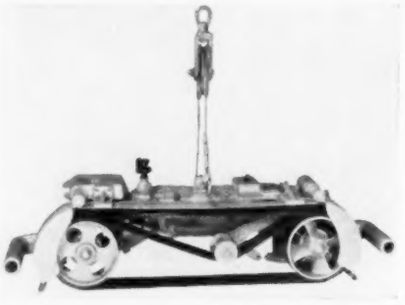
fans and other rotating equipment. This unit, shown in the accompanying illustration, is suitable for driving equipment at speeds from 1200 to 4000 revolutions per minute and is available up to 250 horsepower under suitable steam conditions.

The new turbine is a single-stage machine with two rows of revolving buckets. Wheel casing is split horizontally to allow easy access to the internal parts, and steam and exhaust pipes are connected to the lower half of the machine. A centrifugal governor with weights pivoting on knife edges, operates with little friction and provides proper speed regulation.

◆

Develops New Line of High Frequency Tools

Buckeye Portable Tool Co., Dayton, O., is broadening its line by the introduction of several new high-frequency electric portable tools. A specially designed high-frequency



High-frequency belt sander introduced by Buckeye Portable Tool Co.

motor is being employed. One of the tools, a high-frequency belt sander designated model No. 352-E, and shown herewith, features a single motor drive.

An interesting feature of this belt sander is that it is air cooled by compressed air, which system increases its efficiency by preventing any dust or grit to get into the motor. Compressed air also is used for the automatic belt tension. By the use of a belt idler it is possible to use manufactured abrasive belts over an endless leather belt

The specially designed high-frequency motor is also being used in the production of a new cup wheel grinder.

◆

Shaper Has Special Head With Automatic Feed

Morton Mfg. Co., Broadway and Hoyt, Muskegon Heights, Mich., is marketing a new high-duty, draw-cut shaper for industrial and railroad shops. Features of this unit, shown at the top of the adjacent column, include a 60-inch stroke, 60-inch horizontal or side feed and a 27-inch vertical feed. Distance between ram and sub-table is 38 inches.

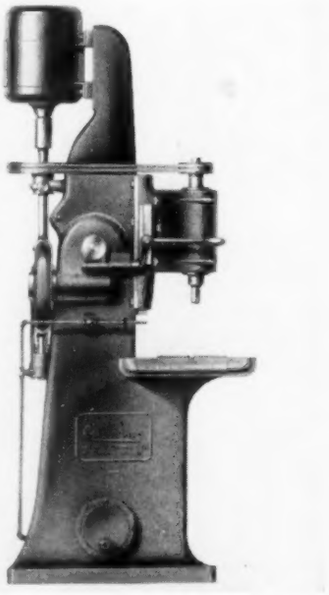
The special head has motor-drive rapid traverse and a 14-inch vertical feed. It also is furnished with a push and pull cut clapper box with a tool slot on either side. Because it is a 4-screw type the handling of heavy and bulky castings is facilitated. Automatic feeds may be changed while machine is in motion.

◆

New Boring Machine Is Built in Two Sizes

Automatic Machine Co., Bridgeport, Conn., has added to its line a new type of diamond tool boring machine, made in two sizes, each equipped with single or double spindles. In the double-spindle design, the spindles are adjustable, center-to-center for two holes in one piece, or for boring holes in two pieces simultaneously.

The boring spindle is equipped with removable bar ends to suit the diameter and length of hole to be bored, and is provided with fine adjustment to the boring tool, graduated in tenths of a thousandth. Base or table is accurately scraped true with spindle, and has ample surface to secure fixtures for the work to be bored. A 1½-horsepower motor is arranged to drive direct the spindles, feed mechanism and lubricating pump for cutting compounds. Frame as shown in the accompanying illustration, is in one casting, with drip pan around the table.



Coulter boring machine recently announced by Automatic Machine Co.

Rail Price Cut, Shape News, Hearten Market

Way Cleared for Year-End Orders for Rails—Structural Awards Best in 13 Months—October Shows Gain in Steel Bookings—Operations Hold at 19½

A REDUCTION in the price of steel rails, timed propitiously at the beginning of the rail buying season, and a noteworthy acceleration of structural steel awards and inquiry inject fresh vigor into the iron and steel markets and counteract a levelling-off process.

Neither development, however, put any tonnage on mill books, and steelmaking operations in the week ended Oct. 22 were barely maintained at 19½ per cent. A scheduled expansion by Youngstown mills may lift the rate to 20 per cent this week, and heavier structural rollings shortly indicate further support.

No deluge of orders is expected to follow the adjustment of the rail price from $43, established Oct. 1, 1922, to $40, but the industry is believed to have made a tangible contribution toward expediting recovery. Normally, rail commitments are made in the final six weeks of the year, and the decks are now clear for 1933 business.

Thus far in 1932, the railroads have bought 181,012 tons of rails and released 26,000 tons carried over. In 1931, total production was 1,157,751 tons, compared with the all-time record of 3,977,887 tons in 1906. It is assumed that the carriers will requite producers and shortly place requirements, probably financed by R. F. C. loans, to ameliorate unemployment.

Norfolk & Western has closed on 5000 tons of rails, 1800 tons of fastenings and 5000 kegs of spikes. Philadelphia transit commission will have some track material to buy soon. The Edgar Thomson rail mill of the Carnegie Steel Co. will resume in the near future, on an accumulation of small releases. Since all accessories but angle bars have been reduced recently, track fastening prices are regarded as stable.

Genuine tonnage figures describe the structural and concrete bar markets. The 75,000 tons for the Golden Gate bridge, on which the McClintic-Marshall Corp. was low in June, 1931, having been formally awarded, this week's awards rise to 90,263 tons, largest since September, 1931. Including 3000 tons for a Louisville sewer, concrete bar awards at 10,237 tons are the highest since the week ended Jan. 2.

Advices from Washington are that the application for an R. F. C. loan for a Hudson river tunnel at New York, requiring 150,000 tons of steel, has a chance. The San Francisco-Oakland bridge, to take 190,000 tons, is regarded as live, while R. F. C. loans have been tentatively closed on the New Orleans Belt line bridge, 65,000 tons, and the Southern California water project, 25,000 tons. If 89,477 tons in live postoffice and other public jobs be added, structural inquiry may be said to reach 519,477 tons. This is not far short of the 719,833 tons awarded in 1932 to date.

Automobile steel requirements are somewhat higher, but manufacturers at Detroit, like small consumers of iron and steel generally, are proceeding cautiously. The disposition to await the outcome of the election is more manifest. October, however, will close with notable gains over September in point of steel bookings, some producers reporting increases of 75 to 90 per cent. Pig iron strength in October is displayed in shipments against September orders rather than in further buying. Scrap is easier as mills withhold new commitments until their bookings warrant.

Because rail prices move infrequently their price is not included in averages, and the finished steel composite of STEEL remains unchanged at $47.70. A 25-cent reduction in foundry iron lowers the iron and steel composite 1 cent to $29.32. The scrap composite stands at $6.96.

Composite Market Averages

	Oct. 22	Oct. 15	One Month Ago Sept., 1932	Three Months Ago July, 1932	One Year Ago Oct., 1931	Ten Years Ago Oct., 1922
Iron and Steel Composite	$29.32	$29.33	$29.32	$29.47	$30.74	$43.60
Finished Steel Composite	47.70	47.70	47.50	47.71	48.22	59.55
Steelworks Scrap Composite	6.96	6.96	7.04	6.06	8.50	18.45

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

COMPARATIVE PRICES OF IRON, STEEL AND COKE

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Oct. 22, 1932	Sept., 1932	July, 1932	Oct., 1931
Pig Iron				
Bessemer, del., Pittsburgh	$15.76	15.76	15.76	18.16
Basic, valley	14.00	14.00	14.00	16.50
Basic, eastern, del. eastern Pa.	13.50	13.75	14.25	16.35
No. 2 foundry, del. Pittsburgh	15.76	15.76	15.76	18.16
No. 2 foundry, Chicago	15.50	15.50	15.50	17.20
*Southern No. 2, Birmingham	11.00	11.00	11.00	12.00
**No. 2X, Virginia furnace	17.75	17.75	18.00	18.00
**No. 2X, Eastern, del. Phila.	14.01	14.26	14.76	17.26
Malleable, valley	14.50	14.50	14.50	16.90
Malleable, Chicago	15.50	15.50	15.50	17.10
Lake Superior charcoal, del. Chi.	23.04	23.04	23.04	25.04
Gray forge, del. Pittsburgh	15.63	15.63	15.63	17.53
Ferromanganese, del. Pittsburgh	73.24	73.24	73.24	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

Coke				
Connellsville, furnace, ovens	2.00	2.00	2.00	2.40
Connellsville foundry, ovens	2.75	2.75	3.00	3.25
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	29.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	29.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	29.00
Wire rods, Pittsburgh	37.00	37.00	37.00	35.00

	Oct. 22, 1932	Sept., 1932	July, 1932	Oct., 1931
Finished Material				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.89
Iron bars, Chicago	1.65	1.65	1.65	1.70
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.75	1.75	1.75	1.76
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.60	1.60
Tank plates, Philadelphia	1.79½	1.79½	1.79½	1.80½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.70	1.70	1.70	1.85
Sheets, No. 24 hot ann., Pitts.	2.10	2.10	2.20	2.40
Sheets, No. 24 galvan., Pitts.	2.85	2.75	2.85	2.90
Sheets, No. 10 blue anneal., Chi.	1.85	1.85	1.85	2.00
Sheets, No. 24 hot ann., Chi.	2.25	2.25	2.35	2.55
Sheets, No. 24 galvan., Chi.	2.90	2.90	3.00	3.05
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.95	1.90
Tin plate, per base box, Pitts.	4.75	4.75	4.75	4.75
Scrap				
Heavy melting steel, Pitts.	$9.50	9.50	8.35	10.45
Heavy melting steel, eastern Pa.	7.25	7.25	6.25	8.20
Heavy melting steel, Chicago	6.00	6.00	4.50	7.75
No. 1 wrought, eastern Pa.	7.25	7.25	6.25	9.20
No. 1 wrought, Chicago	5.25	5.25	4.00	8.00
Rails for rolling, Chicago	8.25	7.25	6.60	10.50

Sheets

Leading Automotive Builders Releasing Moderate Tonnages —General Market Is Quieter

SHEET PRICES, PAGE 47

Pittsburgh—Though specifications and shipments have subsided somewhat, mill operations in the commoner grades of sheets are close to 20 per cent. A few fair sized lots of galvanized sheets were inquired for last week, and black sheets also have been aiding in the improvement. October lends every promise of substantialy bettering September, both in orders and shipments. Though sustained automotive buying is lacking, sheet mills have heard from some consumers in the Detroit district. There have been no recent price developments either in common or full-finished sheets.

Boston—Low bid of 3.07c, delivered, less 2 per cent discount, on 750 tons of No. 24 hot rolled annealed sheets for Massachusetts automobile plates was submitted by Merrill & Usher, Worcester, and L. E. Zurbach Steel Co., Boston. This figures back to about 2.10c base, which, in view of the discount and other items, is slightly under the market. The two low bidders will share the contract.

Philadelphia—Sheetmakers expect early release of substantial tonnages of autobody material by a manufacturer here, under contract with a mid-western automobile builder. The market is quiet, and prices unchanged.

New York—Sheet demand appears to be marking time. A stronger tone prevails in galvanized, most sellers endeavoring to obtain 2.85c, Pittsburgh.

Cleveland — Automotive tonnage forms a larger share of current sheet business than in some months. In addition to Chevrolet's recent purchases, Buick, Chrysler and Willys-Overland are placing orders. Sheets now being ordered are for new models to be in dealers' hands before Jan. 1. The run of miscellaneous sheet orders is holding up to recent improved volume. Refrigerator manufacturers are entering their fall and winter manufacturing season; barrelmakers, obtaining better prices for their products, are ordering sheets. More makers of enameling sheets have gone to 3.10c, base, Pittsburgh, though 3.00c still is noted. Black sheets continued at 2.10c to 2.20c; small lots of galvanized are usually 2.85c.

Youngstown, O.—Automotive releases as of Oct. 17 produced scarcely more than a ripple because of the wide distribution. Smaller users continue to take the bulk of the tonnage. A slight reduction is noted in the number of active sheet mill units.

Cincinnati — Moderate expansion in demand for sheets supports production at about 30 per cent. Buying is evidently close to immediate needs.

Chicago—Sheet demand is holding well, business coming principally from small miscellaneous consumers. Shipments to the automotive industry are slow to improve. Farm implement manufacturers have made few commitments. Galvanized roofing material is receiving but little call in the farm areas.

St. Louis—The petroleum industry is making larger sheet purchases than at any other time this year. Sales to furniture manufacturers also are improving, while orders for roofing material have slowed, though the general demand for galvanized and black sheets lead in volume.

Ask for Tax Reduction

St. Paul—Companies mining Minnesota iron ore have petitioned the state tax commission for a 20 per cent reduction in assessed valuation on unmined ore. The decrease would amount to $44,000,000, and result in a saving of nearly $3,000,000 annually by the companies.

CURRENT FINISHED STEEL PRICES

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10

(24 to 48 inches wide)

Pittsburgh, base	1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, delivered	1.70c
New York, delivered	1.90c
Birmingham, base	1.70c
Philadelphia, delivered	1.86c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, delivered	2.01c
New York, delivered	2.05c
St. Louis, delivered	2.04c
Birmingham, base	1.85c
San Francisco c.i.f.	2.32½c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.10c to 2.20c
Gary, Ind. Harbor, base	2.20c to 2.30c
Chicago, delivered	2.25c to 2.35c
New York, delivered	2.45c to 2.55c
Philadelphia, del.	2.41c to 2.51c
Birmingham, base	2.35c
St. Louis, delivered	2.54c
San Francisco, c.i.f.	2.85c
Detroit, delivered	2.28½c

GALVANIZED NO. 24

Pittsburgh, base	2.85c
Gary, Ind. Harbor, base	2.95c
Chicago, delivered	3.00c
Philadelphia, delivered	3.06c to 3.16c
New York, delivered	3.10c to 3.20c
Birmingham, base	3.00c
St. Louis, delivered	3.19c
San Francisco, c.i.f.	3.50c

AUTOBODY NO. 20

Pittsburgh, base	2.65c to 2.75c

FURNITURE

Pittsburgh, No. 10 heavy	2.55c to 2.65c
Pittsburgh, No. 20 light	3.05c to 3.15c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.30c to 2.40c
Gary, base	2.40c to 2.50c
St. Louis, delivered	2.77½c

HEAVY COLD ROLLED NO. 10

Pittsburgh, base	2.10c
Gary, Ind. Harbor, base	2.20c
Chicago, delivered	2.25c
Philadelphia, delivered	2.41c
New York, delivered	2.55c

COLD ROLLED NO. 20

Pittsburgh, base	2.60c
Gary, Ind. Harbor, base	2.70c
Chicago, delivered	2.75c
Philadelphia, delivered	2.91c
New York, delivered	2.95c

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95

(Per pound)

Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, delivered	1.79½c
New York, delivered	1.90c
Boston, delivered	2.02c
Buffalo, delivered	1.85½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Birmingham, Ala., base	1.75c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	2.00c
*St. Louis, delivered	1.94c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, delivered	1.75c
New York, delivered	1.87c
Boston, delivered	2.00½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, Ala., base	1.75c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, delivered	1.91c
New York, delivered	1.95c
Boston, delivered	2.02c
Pittsburgh, cold finish	1.75c
Pittsburgh, forg. qual.	1.85c
San Francisco, c.i.f.	2.10c

RAIL STEEL

Chicago Heights	1.50c
Eastern mills	1.35c

IRON

Chicago, base	1.60c
New York, delivered	1.85c to 1.90c
Philadelphia, delivered	1.81c to 1.86c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Pitts., stock lengths, mill	1.60c
Chicago, billet	1.60c to 1.75c
Chicago, rail steel	1.30c to 1.45c
Philadelphia, cut lengths	1.86c
Cleveland, cut lengths	1.75c

Cold-Finished Bars, Shafting

Base, Pittsburgh

10,000 to 19,999 pounds	1.70c
20,000 to 59,999 pounds	1.65c
60,000 to 99,999 pounds	1.60c
100,000 pounds and over	1.57½c

Chicago, Cleveland, Buffalo 5c higher; Detroit, 20c; eastern Michigan 25c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold Strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Tin and Terne Plate

Per 100-pound box, Pittsburgh

Tin plate, coke base, cont.	$4.75
Tin plate, coke base, stock	3.85
Long ternes, 24, unassorted	2.80c

Gary, Ind., base 10 cents higher

Alloy Steel

Hot Rolled—F.o.b. Mills

Hot rolled; base 2.45c to 2.65c, mills; differentials to various consumers

S.A.E.	Alloy Diff.	4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
2000	0.25	5100 .80 - 1.10	
2100	0.55	Cr.	0.45
2300	1.50	51.00 Cr.	
2500	2.25	spring	0.20
3100	0.55	6100 bars	1.20
3200	1.35	6100 Spring	0.95
3300	3.80	Cr., Ni., Van.	1.50
3400	3.20	Carbon van.	0.95
4100 .15 to .25 Mo.	0.50	9250 (flats)	0.25
		9250 (rds., sq.)	0.50

Strip, Hoops, Bands

Hot-rolled strip up to 23 15/16 in. wide, Pitts.	1.45c
Do., Chicago	1.55c
Do., del. Philadelphia	1.76c to 1.81c
Do., del. New York	1.80c to 1.85c
Cooperage hoop, Pitts.	1.55c to 1.60c
Do., Chicago	1.65c to 1.70c
Cold-roll. strip, Pitts., Cleve.	1.90c to 2.00c
Worcester, 3 tons over	2.20c

Rivets, Wrought Washers

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. and smaller, Pitts., Chicago, Cleveland	70, 10 and 5 off
Washers, c.l., Pitts. dist.	$6.50 to 6.75 off
Do., Chicago district	7.00 to 7.50 off

Rails, Track Material

*Standard rails, mill	$40.00
Relay rails, Pitts., 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	23.00 to 25.00
Light rails, 25-45, mills	$32.00
Light rails, Chicago	$34.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.40c
Spikes, boat, barge, Pitts.	2.65c
Track bolts, Chicago	3.50c
do., standard, jobbers	73 off list
Tie plates, Pitts.	$37.00
Tie plates, Chicago	$35.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 75 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 75 off
Tire bolts ..... 60 and 10 off
Stove bolts, 77½, 25 and 10 off in pkgs.; 86 off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 75 off

HEXAGON CAP SCREWS

Milled ..... 80-25 off
Upset 1 in. diam. and smaller 80-25-10 off

SQUARE HEAD SET SCREWS

Upset, 1 in. and smaller ..... 75-10-10 off
Headless set screws ..... 75-10 off
Upset, larger than 1 in. ..... 75-10 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh	$2.50
Do., less carloads, 5 kegs or over	$2.90
Less than 5 kegs	$3.05
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Steel sheet piling, Pitts.	1.90c

Bars

Stronger Demand Continues From Miscellaneous Users—Other Needs Offer Hope

BAR PRICES, PAGE 47

Chicago—Bar orders are fairly well maintained, although little improvement is shown over the volume of the past several weeks. Orders from the automotive industry are increasing only slowly, while little business is appearing from the farm implement industry. One manufacturer of farm equipment supplying a mail order house is operating at a good rate, but the larger interests have yet to inaugurate extensive production programs. Miscellaneous bar users continue to provide the chief support to activity. The market continues 1.70c, Chicago.

Boston—Henry Disston & Sons Inc., Philadelphia, has been awarded 150 tons of manganese acid steel bars for the Springfield, Mass., armory at 3.98c, delivered. Commercial steel alloy and forging bars are dull, with 1.60c, Pittsburgh, on the former generally firm.

Philadelphia—Requirements of the Pennsylvania and the Baltimore & Ohio, are engaging the attention of steel bar makers. Demand otherwise is listless, with prices unchanged at 1.60c, Pittsburgh. An occasional fair-sized order is reported for common iron bars, quoted 1.50c to 1.55c, Pittsburgh.

Pittsburgh—Specifications for carbon steel bars are holding at better than a month ago, although the margin is small. Several further automobile orders are making their appearance on some flat and round sections. Less activity in alloy steel is noted. Reinforcing bars continue to take most bar mill output with a recent 3000-ton order to a local mill. In general, soft steel bars are based on 1.60c and alloy is 2.45c to 2.65c, mill.

Cleveland—Orders for steel bars continue gaining moderately, forging shops here taking more material. A slight further improvement is noted in automotive requirements. Bars are steady at 1.65c, base, Pittsburgh.

Cold-Finished Orders by Auto Builders Help

Cold Finished Prices, Page 47

Pittsburgh—Several tonnage orders by two low priced car producers have been issued for cold-finished steel bars. In addition, orders from parts manufacturers have been the underlying cause for betterment in specifications and shipments this month. The minimum base price of 1.70c plus full extras is well observed.

Bolt, Nut Market Feels Car Repair Impetus

Bolts, Nuts, Rivets Prices, Page 47

Pittsburgh—Bolt and nut production was at 20 per cent last week, the highest rate in several months. Specifications are well spread, although orders still are small. A few railroads bought last week for car repair work. Large rivets are quoted at 2.25c, Pittsburgh, and bolts and nuts 75 off list. No inquiry into 1933 has appeared.

Cleveland—Nut and bolt business is approximately 25 per cent of the comparable period last month. Carload orders continue to be received from railroads.

Chicago—Bolt, nut and rivet specifications have increased fairly substantially following a quiet period early in October.

Tin Plate Operations Retain Recent Gain

Tin Plate Prices, Page 47

Pittsburgh—At 45 per cent, tin mill operations last week held the gain of the preceding week. There is no prospect of early change in this percentage. Nominally, $4.75 continues the price per base box, with an announcement for first half of 1933 expected soon.

Plates

Railroad Orders Are More in Evidence — 1800 Tons Purchased for Ten Oil Tanks

PLATE PRICES, PAGE 47

Chicago—Prospects for improved plate demand depend to a large extent upon probable resumption of freight car building and car repair work. A few small tank projects are developing from waterworks construction, financing for which has been extended by the Reconstruction Finance Corp. Little new inquiry is noted for oil tanks. Plates generally are 1.70c, Chicago.

Boston—Plate buying continues to hold well. A gain is noted in both large and small tank work. Prices generally are 1.70c, Coatesville.

Philadelphia—Distribution of several thousand tons of plates by the Pennsylvania railroad is expected to be announced shortly. The Reading Co. has purchased 400 to 500 tons additional, from an eastern Pennsylvania mill, the fourth to have participated in its orders. The total amounts to approximately 2000 tons, with the remainder, around 1800 tons, likely to be placed after Nov. 1. Baltimore & Ohio requirements are expected to engage the attention of plate producers shortly. Most sellers are quoting 1.70c, Coatesville, on the usual run of business.

Pittsburgh — Following a quiet market for several months in barge work, a local shop has taken an order for a 200-ton oil barge for the Sun Oil Co. Indications point to a possibility of a further purchase by the same interest. Chicago Bridge & Iron Works, Chicago, is fabricating 1800 tons of plates for ten tanks for the Gulf Refining Co. for Toledo, O., and Dublin, Ind. The base of 1.60c is fairly well observed here.

Cleveland—Plate mill operations here increased slightly during the past week. The volume of sales in this district is holding up, but is not of a pronounced character in any direaction.

Contracts Placed

1800 tons, ten tanks to be erected at Toledo, O., and Dublin, Ind., for Gulf Refining Co., Pittsburgh, to Chicago Bridge & Iron Works, Chicago.

760 tons, ⅜-inch plates for toe protectors, breakwater, Santa Monica, Calif., to Central Iron & Steel Co., Harrisburg, Pa.

200 tons, barge, 135 x 50 x 10 feet, for Sun Oil Co., for use on Mississippi river, to American Bridge Co., Pittsburgh.

150 tons, pressure tank for St. Louis County Gas Co., to Chicago Bridge & Iron Works, Chicago.

100 tons, tanks for Vernon, Calif., to unnamed interest.

Contracts Pending

105 tons, navy, Philippine islands; Chicago Bridge & Iron Works, Chicago, low.

100 tons, for Nishkayuna, N. Y.; bids Oct. 27.

Railroads

Reduction of $3 on Rails May Stimulate Buying—Norfolk & Western Divides 5000 Tons

TRACK MATERIAL PRICES, PAGE 47

New York—A material increase in rail demand is expected to result from the recent cut of $3 in rails, to $40, first announced by the Carnegie Steel Co. last week. Special significance is attached to the fact that it was followed by a day luncheon tendered by Myron C. Taylor, chairman of the United States Steel Corp., to representatives of eight railroads. While those who attended commented little, it is believed a disposition was shown to release orders should rail prices be reduced. For many months some railroads have contended that rail prices, unchanged for 10 years, were out of line.

So far this year American railroads have released 207,012 tons of rails, the lightest total on record. The Pennsylvania and New York Central have released a relatively negligible amount, and most if not all was against orders placed last year.

The general assumption is that the new price will be retroactive on shipments against old contracts. The trade generally expects the new rail prices to have little effect on accessories, except perhaps angle bars, which long have been unchanged at 2.70c, base. Most other items have been changed within recent months.

While specifications are expected to be stimulated by the reduction, the steel trade is conservative in estimates of tonnage and as to how soon improvement may start. Normally the rail buying season opens a little later than this. It is known that in spite of exceedingly light tonnage specified this year leading roads have rails along tracks. The Pennsylvania apparently has not laid the 20,000 tons specified earlier this year against the 200,000-ton order placed in January, 1931. Moreover the financial situation of the railroads shows little improvement. With mills in need of rollings and unemployment a leading issue every effort will be made to stimulate buying.

Philadelphia department of city transit plans expenditure of $1,600,000 for rails and track accessories, substation and other work for Broad street subway. Orders by the Pennsylvania railroad for material for its car program includes 1800 patented steel doors for box cars and 1400 for auto cars, which are placed with the Youngstown Steel Door Co.

Pittsburgh—Standard open-hearth rails have been reduced to $40, mill. The former price of $43 had been in effect since Oct. 1, 1922. A few small orders for steel have been placed by the Pennsylvania railroad for car building work but the major portion of this business is still pending. Norfolk & Western has bought 5000 tons of 130-pound rails, 4000 tons going to Carnegie steel Co. and 1000 tons to Bethlehem Steel Co. Previous to the award of the rails last week, the Norfolk & Western bought 3000 tons of track fastenings. About 1800 tons of heavy tie plates were divided among Carnegie Steel Co., Bethlehem Steel Co., Wheeling Steel Corp. and Weirton Steel Co. Five hundred tons of spikes were divided between two makers and a round tonnage of bolts, rail anchors and other miscellaneous fastenings were purchased. Steel mills expect to benefit more from car repair and car-building programs in the near future than from rail purchases. Surveys of leading railroads show right of way in better condition than rolling stock. Granted even a minor increase in traffic volume, considerable additional car repairing and building will be necessitated. Prices on railroad steel products continue unchanged with spikes 2.40c, angle bars 2.75c and tie plates 1.85c, mill.

Chicago—Despite the extremely low level of recent rail releases, which is permitting only limited operations of one rail mill in the district, hope is entertained for the appearance of more substantial tonnages. The $3 a ton reduction to $40, mill, in price of rails, effective Oct. 20, is seen as a stimulant to buying. The market for freight cars, locomotives and various steel products for track maintenance and repair work continues slow, with little new inquiry noted. Where increases in car shop activity have occurred, additional steel buying has been necessary, due to the low level of inventories. Pending freight cars are limited to 500 for the Chicago Great Western railroad.

Cleveland—Some substantial releases for track spikes feature the market here. Railroads continue ordering small amounts of other materials for repair and maintenance.

Denver—Colorado Fuel & Iron Co. has been given an order for 200 tons of tie plates by the Denver & Rio Grande Western railroad.

Car Orders Placed

Pacific Fruit Express, 250 tons steel superstructures, to McClintic-Marshall Corp.

Rail Orders Placed

Norfolk & Western, 5000 tons, 130-pound sections. Carnegie Steel Co., Pittsburgh awarded 4000 tons; and Bethlehem Steel Co., Bethlehem, Pa., 1000 tons. Award has also been made on 3000 tons of fastenings, including 1800 tons of heavy tie plates awarded to Bethlehem Steel Co., Carnegie Steel Co., Weirton Steel Co., and Wheeling Steel Corp.; 5000 kegs of spikes between two producers and miscellaneous suppliers sharing in other fastening business.

Car Orders Pending

Navy, three box cars, for Hog Island, Philadelphia; bids close Oct. 25.

Wire Quieter as Demand Slows, but Prices Hold

Wire Prices, Page 47

Chicago—Specifications for wire products are dipping slightly below the September rate. Agricultural districts continue light buyers of fencing and barbed wire and larger users of manufacturers' wire show no additional improvement in requirements. The automotive industry is slow to increase its specifications. Prices are well maintained, continuing $2 for wire nails in carloads and 2.25c for plain wire.

Worcester, Mass.—Wire prices continue firm, with recent gains in buying generally maintained, although the increase in business has been slow and diversified. Providence Insulated Wire Co. has booked several substantial federal government contracts, including one for Panama.

Pittsburgh—Orders and shipments for wire products are not measuring up to the September record, although the deficiency is slight and may readily be made up. Less carload orders predominate, with prices firm. In carload lots, nails are taking $1.95 minimum. Plain wire is generally 2.20c, Pittsburgh.

Cleveland—Wire and wire rod sales led in the past week's business for an important maker of a wide variety of finished steel products. For all its products booked in this district, sales Oct. 18 were the best of any day since last spring. The general volume of wire business is fairly well sustained at recent improved levels.

Structural Shapes

Awards Largest Since September, 1931, Topped by 75,000 Tons for Golden Gate Bridge—Federal Financing Nears for Hudson River Tunnel, Requiring 150,000

STRUCTURAL SHAPE PRICES, PAGE 47

New York—Despite some opposition it is understood the Reconstruction Finance Corp. will soon grant a loan of $75,000,000 to finance the proposed vehicular tunnel under the Hudson river at New York. Most of the major difficulties have been overcome. This job will require 150,000 tons of structural steel, as reported in STEEL, Aug. 8. Current awards continue light. Stringent budget reduction, forced by bankers, is holding up several New York city jobs.

San Francisco—Seventy-five thousand tons of structural shapes for the main span of the Golden Gate bridge have been formally awarded to the McClintic-Marshall Corp., Bethlehem, Pa. Bridge Builders Inc., San Francisco, are low on 9700 tons for the approaches; and John A. Roebling's Sons Co., Trenton, N. J., low on 28,000 tons of steel cable. Bids also have been opened on 5058 tons of bars. These tonnages comprise the bulk of the steel for the bridges. For the San Francisco-Oakland bridge, to be financed by the R. F. C. 190,000 tons will be required, as previously reported.

Boston — Business has slumped, with little increase in new inquiry. Award of the Saugus river bridge substructure, requiring a substantial amount of steel piling, has been held up.

Philadelphia — Buying continues light, with plain shapes holding at 1.70c, nearest mill. Specifications are expected out shortly on a 1000-ton building for the American Philosophical society here.

Pittsburgh—Structural mills are entering less tonnage for immediate rolling. Carnegie Steel Co. has closed on 900 tons of sheet piling and 500 tons of miscellaneous steel for a Louisville, Ky., sewer, and Jones & Laughlin Steel Corp. has been awarded the 300-ton Lawrence county, Pennsylvania, bridge. Several 20, 30 and 40-ton repair jobs for the Baltimore & Ohio, Chesapeake & Ohio and Louisville & Nashville railroads, were out for figures last week. Plain material is held at 1.60c, mill.

Cleveland—Structural awards are more numerous, with practically all of importance, public jobs. Ingalls Iron Works Co., Birmingham, Ala., took 250 tons for a United States reformatory building at Chillicothe, O., and 104 tons for a high school, Cleveland. Local fabricators note that on small jobs recently awarded in Cleveland to outside interests, 2.00c, fabricated, applied, with steel to be shipped in. New jobs on which Ohio will take bids Nov. 4 include three bridges, requiring 500 tons for one in Trumbull county, 350 tons in Lawrence county, and 200 tons in Preble county.

Chicago—Bids close this week on several fairly large bridge projects in Illinois. New inquiry is slightly less active. Public work is expected to continue at a fairly good rate during the winter to relieve unemployment. Outstanding in inquiry for private construction is a department store addition at Indianapolis calling for 1700 tons.

Contracts Placed

75,000 tons, main span, Golden Gate bridge, San Francisco, to McClintic-Marshall Corp., Bethlehem, Pa.

2000 tons, lock, London, W. Va., to Dravo Contracting Co., Neville Island, Pittsburgh.

1400 tons, including 900 tons steel sheet piling, sewer, Louisville, Ky., to Carnegie Steel Co., Pittsburgh.

1000 tons, Benning bridge, Anacostia river, Washington, to McClintic-Marshall Corp., Bethlehem, Pa.; Kaufman Construction Co., Philadelphia, general contractor.

900 tons, bridges, Denver & Rio Grande Western railroad, Orested to Dotisero branch, to unnamed interests.

900 tons, bridges for St. Louis-San Francisco railroad, to American Bridge Co., Pittsburgh.

750 tons, four bridges for Virginia & Western railroad, to Virginia Bridge & Iron Co., Roanoke, Va.

650 tons, highway bridges, Indiana and Missouri, to Vincennes Bridge Co., Vincennes, Ind.

600 tons, building, Chrysler Corp., World's fair, Chicago, to unstated fabricator.

575 tons, H-columns, 8-inch, breakwater, Santa Monica, Calif., to Phoenix Iron Co., San Francisco.

500 tons, state highway bridge, Raymertown-Hoosick section, Rensselaer county, New York, to Phoenix Bridge Co., Phoenixville, Pa.; New Haven Road Construction Co. Inc., New Haven, Conn., general contractor.

350 tons, building, Kankakee, Ill., for Bear Brand Hosiery Co., to Joseph T. Ryerson & Son Inc. Chicago.

350 tons, highway bridge, Stratford, Conn., to American Bridge Co., Pittsburgh.

350 tons, school, Hawthorne, N. J., to Breen Iron Works, Newark, N. J.

315 tons, school, Buffalo, to Smith-Caffrey Co., Syracuse, N. Y.

300 tons, bridge, Lawrence county, Pennsylvania, to Jones & Laughlin Steel Corp., Pittsburgh; through Klein Contracting Co., Butler, Pa. Award incorrectly reported in STEEL Oct. 17, to McClintic-Marshall Corp., Bethlehem, Pa.

290 tons, sheet steel piling, Hoover dam, Boulder City, Nev., to unnamed interest.

272 tons, including 207 tons of steel piling and 65 tons of structural steel, guard lock, Louisiana-Texas intracoastal waterway, Vermilion Parish, La., to Jones & Laughlin Steel Co., Pittsburgh; J. De Puy, San Antonio, Tex., contractor.

270 tons, state highway bridge, Northumberland county, Pennsylvania; awarded through F. B. Kessler, local contractor, to McClintic-Marshall Corp., Bethlehem, Pa.

270 tons, viaduct, Northern Pacific railroad, Mandan, N. Dak., to Minneapolis Steel & Machinery Co., Minneapolis; Rue Bros., Bismarck, N. Dak., contractors. Kalman Steel Corp. awarded 43 tons of reinforcing bars.

260 tons, federal bridge, San Gabriel river, California., to Consolidated Steel Corp., Los Angeles.

250 tons, bridge, Ontarioville, Ill., for Chicago, Milwaukee, St. Paul & Pacific railroad, to American Bridge Co., Pittsburgh.

250 tons, building, Sears, Roebuck & Co., World's fair, Chicago, to Joseph T. Ryerson & Son Inc., Chicago.

250 tons, building, federal reformatory Chillicothe, O., to Ingalls Iron Works Cp., Birmingham, Ala.; W. J. Paul, Zanesville, O., contractor.

250 tons, bridges, route 2, section 6, New Jersey to Harris Structural Steel Co., New York; I. B. Miller Inc., New York, general contractor.

250 tons, superstructures for cars for Pacific Fruit Express Co., San Francisco, to McClintic-Marshall Corp., Bethlehem, Pa.

250 tons, motion picture stage, Universal Pictures Corp., Universal City, Calif., to Consolidated Steel Corp., Los Angeles.

248 tons, El Capitan dam, San Diego, Calif., to Pacific Iron & Steel Co., Los Angeles.

240 tons, factory building, Keystone Lubricating Co., Philadelphia; awarded through Frank G. Stewart to Morris, Wheeler & Co. Inc., Philadelphia.

225 tons, tunnel structures for Hetch Hetchy project, San Francisco, to unnamed interest.

210 tons, bridge, Cumberland, Ill., for

Awards Compared

	Tons
Awards, week ended Oct. 22	90,263
Awards, week ended Oct. 15	6,712
Awards, week ended Oct. 8	9,934
Awards, this week in 1931	15,681
Av. weekly awards, 1931	34,236
Av. weekly awards, 1932	16,042
Av. weekly awards, Sept.	10,688
Awards to date, 1931	1,592,100
Awards, to date, 1932	719,833

Chicago & North Western railroad, to Milwaukee Bridge Co., Milwaukee.

200 tons, state bridges, Cherokee county, Texas, to Wyatt Metal & Boiler Works, Dallas; Buckner Bros., Cleburne, Tex., general contractor. North Texas Iron & Steel Co., Fort Worth, awarded 70 tons of reinforcing bars.

200 tons, postoffice, Marysville, Calif., to Bethlehem Fabricators Inc., Bethlehem, Pa.

190 tons, bridge, Sanford, Fla., to Ingalls Iron Works Co., Birmingham, Ala.; through Kreis Contracting Co. Inc., Knoxville, Tenn.

180 tons, school, Louisville, Ky., to Jones & Laughlin Steel Corp., Pittsburgh; through George H. Rommel Co., Louisville.

175 tons, highway bridge, Ramsey, N. J., to McClintic-Marshall Corp., Bethlehem, Pa.

160 tons, Stanton substation, New York, to Harris Structural Steel Co., New York.

140 tons, Silver baths, Coney Island, New York, to Simon Holland Son Inc., Brooklyn, N. Y.

135 tons, building, Holy Cross college, Worcester, Mass., to Eastern Bridge & Structural Co., Worcester.

114 tons, postoffice, Oroville, Calif., to Bethlehem Fabricators Inc., Bethlehem, Pa.

104 tons, Fowler Junior high school, Cleveland, Ingalls Iron Works Co., Birmingham, Ala.

100 tons, school, Endicott, N. Y., to Lackawanna Steel Construction Corp., Buffalo.

100 tons, state bridge, South Amsterdam, N. Y., to Lackawanna Steel Construction Corp., Buffalo.

100 tons, also 250 tons of wire cable and 250 tons of machinery, 150-ton cableway for Hoover dam project, Boulder City, Nev., to Lidgerwood Mfg. Co., Elizabeth, N. J.

100 tons, state bridge, Port Royal, Pa., to Bethlehem Fabricators Inc., Bethlehem, Pa.

Contracts Pending

9700 tons, approach spans, Golden Gate bridge, San Francisco; Bridge Builders Inc., San Francisco, low.

9000 tons, 7500 for powerhouse and 1500 tons for three traveling cranes, Hoover dam, Boulder City, Nev.; bids about July 1, 1933.

8000 tons, estimated, rebuilding St. George viaduct, Staten Island, N. Y.

2000 tons, courthouse, Jacksonville, Fla.; Algernon Blair, Montgomery, Ala., low at $1,211,840 with aluminum windows; $1,198,562, with wrought iron or steel exterior windows; bids Oct. 14.

1700 tons, addition, Block department store, Indianapolis.

1500 tons, highway bridge, Justice, Ill.; bids Oct. 26.

1315 tons, structural steel and steel castings, locks No. 2 and No. 3, Allegheny river, Pittsburgh; Vang Construction Co., Pittsburgh, low on general contracts at $1,702,696.

1100 tons, 205th street viaduct, Bronx, N. Y.

1050 tons, three Ohio state bridges; 500 tons, Trumbull county; 350 tons, Lawrence county; and 200 tons, Preble county; bids, department of highways, Columbus, O., Nov. 4.

1000 tons, highway bridges, Oklahoma.

1000 tons, shapes and castings, Mississippi river lock and dam, Canton, Mo.; Maxon Construction Co., Dayton, O., awarded general contract.

800 tons, highway bridges, Illinois; bids Oct. 26.

650 tons, postoffice, Binghamton, N. Y.; Walbridge Aldinger Co., Detroit, low, limestone, $450,000; marble, $493,000; bids Oct. 17.

450 tons, community building, Madison, N. J.; steel bids in.

350 tons, psychopathic ward, General hospital, San Francisco; bids Nov. 16.

260 tons, postoffice, Wilkes Barre, Pa., bids opened Oct. 19.

234 tons, bridge over Hat creek and Pitt river, California; Moore Drydock Co., Oakland, Calif., low.

225 tons, postoffice, Allentown, Pa.; general contract awarded to Cress Engineering Co., New York.

145 tons, bridge, Zekiah swamp, Charles county, Maryland; Mullan Contracting Co., Baltimore, low.

125 tons, postoffice, Princeton, N. J.; general contract awarded to Digbee Construction Co., 51 Lexington avenue, Passaic, N. J.

100 tons, shapes and bars, postoffice, Mount Vernon, O.; Peerless Contracting Corp., Gary, Ind., low.

100 tons, two postoffices, one at Lansdale, Pa., on which bids opened Oct. 26, the other at Stroudsburg, Pa., on which bids opened Nov. 1.

100 tons, garage, American Oil Co., Philadelphia.

Concrete Bars

Volume Increases — 3000 Tons Placed for Louisville Sanitation Project—Award of 5058 Tons for Golden Gate Bridge Expected Soon—Hoover Dam Work Maturing

REINFORCING BAR PRICES, PAGE 47

New York—Welded mesh for highway and bridge construction continues to furnish the bulk of business. Cut length bars are steadier at 1.75c, Pittsburgh. Several hundred tons of mesh is required for New York state highways, closing Oct. 28.

Boston—Led by 550 tons for state highways and bridges at Wellesley, Mass., reinforcing steel awards are heavier. A. G. Tomasello & Sons Inc. have the contract for the Porter street portal, East Boston traffic tunnel. Prices are inclined to be easy.

Philadelphia.—Aside from one or two purchases, the market continues featureless. Prices are unchanged at 1.55c, Pittsburgh, for billet bars in cut lengths; and 1.35c, eastern mill, for rail steel bars.

Pittsburgh—After delayed negotiations, 3000 tons of reinforcing steel bars for a sewer at Louisville, Ky., have been placed with Carnegie Steel Co. Bar producers are experiencing a moderately better month than September. New billet bars are based on 1.60c, Pittsburgh, with more firmness than a few weeks ago.

Cleveland—Two hundred tons of concrete bars for a state bridge at Defiance, O., were placed with an Indiana fabricator, and 125 tons for a federal reformatory building at Chillicothe, O., with a Birmingham, Ala., interest. A number of minor orders are noted. A state letting Nov. 4 will require small lots.

Chicago—Bids open this week on several thousand tons of bars for Illinois road and bridge work. It is thought doubtful that all the pending highway construction will be carried out in the near future, due to freezing weather, although this will not affect bridge building. Reinforcing bar prices continue week.

Birmingham, Ala.—Highway work in Alabama and adjoining states is developing considerable demand for reinforcing bars. About 500 tons have been awarded to two fabricators for work between Selma and Uniontown, Ala.

Awards Compared

	Tons
Awards, week ended Oct. 22	**10,237**
Awards, week ended Oct. 15	**2,633**
Awards, week ended Oct. 8	**5,003**
Awards, this week 1931	**12,195**
Av. weekly awards 1931	**6,808**
Av. weekly awards, 1932	**4,282**
Av. weekly awards, Sept	**4,523**
Awards, to date, 1931	**310,793**
Awards, to date, 1932	**184,147**

Contracts Placed

3000 tons, sewer, Louisville, Ky., to Carnegie Steel Co., Pittsburgh.

800 tons, mesh, highway, eastern state parkway, section I, Putnam county, New York, to unstated fabricator; through Columbia Engineering & Contracting Co., New York.

750 tons, bridge, F.A.P.E. 30, section B, Hatchie river, Tipton and Lauderdale counties, Tennessee, to Gulf States Steel Co., Birmingham, Ala.; Foster & Creighton, Nashville, Tenn., general contractor. Virginia Bridge & Iron Co., Roanoke, Va., awarded 68 tons of structural steel.

750 tons, breakwater, Santa Monica, Calif., to Pacific Coast Steel Corp., Los Angeles.

600 tons, school, Louisville, Ky., to Jones & Laughlin Steel Corp., Pittsburgh;

through George H. Rommel Co., Louisville.

550 tons, state highways and bridges, Wellesley, Mass.; 300 tons to Concrete Steel Co. and 250 tons to Truscon Steel Co., Boston.

500 tons, bridge, Hackensack river route 6, section I, Little Ferry and Ridgefield Park, New Jersey, to Gulf States Steel Co., Birmingham, Ala.; through Rodgers & Haggerty, New York.

500 tons, state road work between Selma and Uniontown, Ala., to Dudley Bar Co., and Concrete Steel Co., Birmingham, Ala.

300 tons, medical school, University of California, San Francisco, to Gunn, Carle & Co., San Francisco.

300 tons, for government, Mare Island, Calif., to Truscon Steel Co., San Francisco.

220 tons, state bridges, Kerr county, Texas, to Laclede Steel Co., St. Louis; L. D. Parks, Fort Worth, Tex., general contractor.

212 tons, guard lock, Louisiana-Texas intracoastal waterway, Vermilion parish, Louisiana, to Jones & Laughlin Steel Co., Pittsburgh; J. De Puy, San Antonio, Tex., contractor. Work also includes lock gates, sluice valves, 5 tons of steel castings and machinery.

200 tons, postoffice, Manchester, N. H., to Kalman Steel Corp., Bethlehem, Pa.; Ferguson & Largura, Gary, Ind., contractor.

200 tons, state bridge, Defiance, O., to unnamed interest.

188 tons, bridge, Sanford, Fla., to Dudley Bar Co., Birmingham, Ala.; through Kreis Contracting Co. Inc., Knoxville, Tenn.

180 tons, building, University of Florida, Gainesville, Fla., to unstated fabricator; Paul Smith Construction Co., Haines City, Fla., general contractor.

150 tons, Jewish home, Pittsburgh; 100 tons to Jones & Laughlin Steel Corp., Pittsburgh, and 50 tons to Carnegie Steel Co., Pittsburgh.

150 tons, mesh, highway, Poughkeepsie-Pleasant Valley route, Dutchess county, New York, to Truscon Steel Co., Youngstown, O.; through Spoor-Lasher Co. Inc., Poughkeepsie.

150 tons, state bridge, Pacolet river, Union and Cherokee counties, South Carolina, to Gulf States Steel Co., Birmingham, Ala.; C. Y. Thomason, Greenwood, S. C., contractor. Latter is buying 150-foot, 6-inch steel truss this week.

125 tons, mess hall, federal reformatory, Chillicothe, O., to Truscon Steel Co., Youngstown, O. Job also includes 250 tons of structural shapes.

112 tons, postoffice, Palo Alto, Calif., to Soule Steel Co., San Francisco.

100 tons, reservoir, Weimer, Calif., to Concrete Engineering Co., San Francisco.

100 tons, addition to state building, Redding, Calif., to unnamed interest.

100 tons, tower for Belmont Park, Fresno, Calif., to Kyle & Co., Fresno.

Contracts Pending

7000 tons, Hoover dam, Boulder City, Nev.; bids on 2000 tons about Dec. 1, and on remainder about March 1, 1933.

5058 tons, Golden Gate bridge, San Francisco; bids opened.

500 tons, mausoleum, San Mateo, Calif.; bids soon.

400 tons, state sanitarium, Oneonta, N. Y.

215 tons, state bridges, Reeves and Garza counties, Texas; Hannah Construction Co., Waco, Tex., general contractor.

206 tons, wire mesh, state highway work in Santa Clara county, Calif.; bids Nov. 2.

200 tons, inspection shed, board of transportation, Jamaica, N. Y.

160 tons, mainly bar mat reinforcing, state highways, Connecticut; bids in.

135 tons, state highway work in San Diego county, Calif.; bids Nov. 2.

120 tons, section C, traffic tunnel, Porter street portal, East Boston, Mass.; A. G. Tomasello & Sons Inc., Boston, general contractor.

Unstated tonnage, arch bridge, Huron county, Ohio; bids, department of highways, Columbus, O., Nov. 4.

Unstated tonnage, 50,000,000-gallon concrete reservoir, Seattle; project financed; bids soon.

Pipe

Ft. Wayne Awards 3500 Tons For Waterworks—5700 Tons, Cast, Pending for Los Angeles

New York—Cast pipe buying is light, although for state hospitals and highways a fair tonnage pends. Prices are being subjected to little test. Kennedy Valve Mfg. Co., Elmira, N. Y., is low on steam and water valves for the navy, east and west yards, on a total bid of $9,624.90, delivered. This is in addition to being low on considerable other navy requirements before the opening covered in the above, Oct. 11. Walworth Co., New York, is low on steam and water valves for Brooklyn and Boston, also the West, on a total bid of $5359.46, delivered.

Pittsburgh—Small sizes of mechanical tubing are in slower demand, but one mill has been getting some fair releases on larger sizes from Detroit. A pilger mill in the Pittsburgh district resumed last week for the first time in over six weeks on production of stock sizes for southern delivery and a group of miscellaneous orders. Standard steel pipe is just about maintaining the volume of September, though one district mill reports the number and individual tonnages of standard tubular products to exceed those of last month. A tonnage of seamless tubing probably will be required for Baltimore & Ohio locomotive repair work.

Chicago—Appearance of occasional orders for relatively large lots relieves a generally-unchanged situation in cast pipe. Oshkosh, Wis., has placed 220 tons of cast pipe, while Ft. Wayne, Ind., is understood to have closed on 3500 tons for waterworks construction. Prices are receiving but little test, but quotations are holding fairly well.

Cast Pipe Placed

3500 tons, 42-inch, Ft. Wayne, Ind., to unstated producer.

240 tons, 16 and 18-inch, Garden City, N. Y., to United States Pipe & Foundry Co., Burlington, N. J.

228 tons, 4 to 10-inch class 150 and 250, Fresno, Calif., to United States Pipe & Foundry Co., Birmingham, Ala.

220 tons, Oshkosh, Wis., to Glamorgan Pipe & Foundry Co., Lynchburg, Va.

137 tons, class B, 6, 8 and 10-inch for Spokane, to R. D. Wood & Co., Philadelphia, and Pacific States Cast Iron Pipe Co., Provo, Utah.

125 tons, various sizes, Benton Field, Calif., to unnamed interest. General contract to Fred W. Snook, San Francisco.

Cast Pipe Pending

5715 tons, 6 to 12-inch class 150, Los Angeles; bids Oct. 21.

1000 tons, 6, 8 and 10-inch, for Niskayuna, N. Y.; bids, Oct. 27.

Unstated tonnage, 1300 lineal feet of 12-inch class C, Fond du Lac, Wis.

Steel Pipe Pending

3000 lineal feet, various sizes, steel and cast iron pipe, locks No. 2 and No. 3, Allegheny river; Vang Construction Co., Pittsburgh, low on general contract.

Unstated tonnage, 16, 24 and 78-inch steel and cast iron; $1,800,000 water project for Seattle; bids soon. Alternate bids on concrete mains. Estimate on obtaining R.F.C. loan was 3500 tons of cast and 4800 feet of 78-inch steel pipe.

Unstated tonnage, 5000 steel boiler tubes, navy, Mare Island, Calif., to Michigan Seamless Tube Co., 64.925c each, delivered.

Semifinished Steel In Larger Demand

Semifinished Prices, Page 54

Demand for semifinished steel is better, especially in sheet bars and wire rods. The largest specifications in the Pittsburgh district are from tin plate mills. Sheet bars, billets and slabs continue $26, base, Pittsburgh, Youngstown, O., and Cleveland. Forging billets usually are $33; and wire rods $37.

Ferromanganese Active

Ferroalloy Prices, Page 54

Sellers of ferromanganese report a continued improvement in specifications, with prices unchanged at $68, duty paid. The movement of domestic spiegeleisen, 19 to 21 per cent, continues to lag. The market is steady at $25 furnace.

Strip

Hot-Rolled Needs Bring Better Tonnage to Mills—General Users Increasing Requirements

STRIP PRICES, PAGE 47

Pittsburgh — Hot-rolled strip, mainly in intermediate sizes, is leading October demand which for some producers is materially better than during September. One mill reports 75 per cent better specifications over last month and has been running one mill continuously more than ten days merely on current orders. Another producer started one of its mills last week on a grouping. Specifications appear to be improved without noticeable automotive buying, although Chevrolet and some of the Chrysler units placed some orders recently. Hot-rolled strip is firm at 1.45c, Pittsburgh, with cold-rolled mostly 2.00c.

New York—While strip is moving less activity than early in the month, a moderate tonnage continues to be placed by consumers affiliated with the textile industry. Meanwhile, prices are 1.45c, Pittsburgh, on hot-rolled and 2.00c on cold-rolled.

Philadelphia—Strip buying is less active than a month ago, and while some fair tonnages are pending, there is no indication of their early disposition. Meanwhile, hot-rolled is unchanged at 1.45c, Pittsburgh, and cold-rolled at 2.00c, Pittsburgh.

Cleveland—General Motors units are more active in the market for strip, substantial orders having been placed recently. Coincident with Chevrolet's recent purchases of sheets came good releases for fender stock. Automotive partsmakers here, however, have not increased purchases. Business, other than automotive, appears quieter. Hot-rolled strip is steady at 1.45c to 1.50c, base, Pittsburgh. Cold-rolled is 1.90c to 2.00c, though more seconds are offered and in instances primes are quoted at prices usually applying to seconds.

Chicago—Strip specifications continue to record minor gains, while production at 12 to 15 per cent is at the highest level in several months. Large tonnages necessary to provide a more substantial increase in production are lacking.

Steel Rate Holds at 19.5; May Go to 20 This Week

Pittsburgh—Steel production last week was unchanged at 17 per cent. One of the two leading mills is operating about two points above this average, the other is slower. Open-hearth activity in plants of the smaller independents varies, one mill operating three furnaces and another resuming with two. The mill at Butler, Pa., may start up soon and the Edgar Thomson rail mill is expected to run off a grouping of orders shortly. Nine out of 53 steelworks blast furnaces are blowing. Four for Carnegie, three for Jones & Laughlin, one each for Pittsburgh Crucible and Pittsburgh Steel.

Operations, week ended Oct. 22	**19.5**
Operations, week ended Oct. 15	**19.5**
Operations, week ended Oct. 8	**19**
Operations, one year ago	**28**
High for 1932, Feb. 6	**28.5**
Low for 1932—July 9	**12**

Philadelphia—While eastern steelmaking operations are unchanged at about 14 per cent, the influence of improved railroad buying is expected to be reflected in an increase shortly.

Buffalo—Steelworks, operating on staggered schedule, will drop production to 14 per cent this week, off five points. Five open-hearth furnaces are scheduled to operate this week in the Buffalo district.

Youngstown, O.—Steelworks operations here last week sagged one point to 18 per cent. They were expected to rebound to nearly 20 per cent this week. Greater activity at bessemer plants last week did not offset a slackening at two open hearth plants.

Cleveland—Steel ingot production here in the week ended Oct. 22 stepped up two points to approximately 25 per cent, and may be further accelerated this week. Corrigan, McKinney Steel Co. lighted a fourth open hearth and operated four for four days, beginning Oct. 15, but subsequently took off one for repairs. Otis Steel Co. continues with two, but may increase to three. American Steel & Wire Co. continues with three.

Chicago—Steelmaking operations are steady, the rate the past week being unchanged at about 18 per cent, with blast furnace schedules also holding at 8 active stacks out of 36. Slight gains are noted in operating rates of some finishing mills, with rail production continued at a very low level.

Birmingham, Ala.—Intermittent operation of open-hearth furnaces has lowered the steel rate here about five points to 25 per cent.

Warehouse Trade Shows Steady Upward Trend

Pittsburgh—Ordering of steel products from stock is irregular. A few good days last week were interspersed with periods of complete inactivity. Sales represent urgent requirements and are confined to pound lots. Volume is only moderately ahead of September. Quoted prices are continued.

Cleveland — Warehouse business here improved during the past week, after a long period of practically stationary volume. The number of orders and the tonnage are better. Prices are unchanged.

Detroit—Warehouse business in iron and steel continues to hold the gain of September, which is moderately encouraging. Whether this improvement is more than seasonal will be determined by the trend of business later in the year or early in 1933. Prices are unchanged.

Cincinnati—Warehouse materials are moving at a better rate with confidence that tonnage will exceed September by a slight percentage. Prices are steady.

Chicago—Orders increased during the middle two weeks of October, being heavier than during the corresponding September period. Prices are unchanged.

St. Louis—A marked improvement has come in business of iron and steel warehouses, yet the volume for the month to date is below that of the comparable period in September.

Taylor Presents Law School

New York — Myron C. Taylor, chairman, United States Steel Corp., presented the law school building to Cornell university, Ithaca, N. Y., at the dedication ceremonies Oct. 15.

Revise Bed Standards

Washington—Revised simplified practice recommendation on bedsteads, springs and mattresses will become effective Nov. 1. This standard covers angle side rails and spiral or coil wire springs.

RAW MATERIAL PRICES

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$15.50
Pittsburgh, dist. fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.00
Philadelphia, delivered	13.51 to 13.76
Virginia furnace	17.25
Granite City, Ill., fur.	16.50 to 17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	18.91 to 19.91
Buff., all-rail, Brooklyn	**18.90**
Buff., all-rail, Newark	**17.28**
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	15.75 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	**19.40**
Buffalo, all-rail, Newark	**17.78**
Buff., all-rail, Boston	19.91 to 20.91
Virginia furnace	17.75
Eastern, del. Phila.	14.01 to 14.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	14.51 to 14.76

MALLEABLE

Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.00
Pittsburgh dis. fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Chicago, furnace	15.50
Buffalo fur., local del.	16.50
Eastern Penna., delivered	16.13 to 19.41
Granite City, Ill., fur.	16.50 to 17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	14.00
Pittsburgh, delivered	14.63 to 15.13
Eastern Penn., del.	13.50
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	14.00

BESSEMER

Valley furnace	14.50 to 15.00
Pittsburgh, furnace	15.00
Pittsburgh, delivered	15.63 to 16.13

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	14.00
Pittsburgh district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19.50; 15—$23 to $24.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

BEEHIVE OVENS

Connellsville furnace	$1.90 to 2.10
Connellsville foundry	2.75 to 4.25
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.21 to 8.81
Chicago, ovens, outside del.	7.00
Chicago, del.	7.75
New England, del.	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.50
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	4.50
Portsmouth, O., ovens Connell., basis	4.50
Buffalo, ovens	7.50 to 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania New Jersey furnaces

(Nominal)

Foundry and basic, 56-63%, contract	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

(Nominal)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.50 to 9.00
North African low phos.	7.50 to 8.50
Swedish basic, 65%	7.50 to 8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.00
Newfoundland fdy., 55%	8.00
Tungsten, spot, short ton unit, duty paid	$10.00 to 10.25
Chrome ore, 48% gross ton c.i.f.	$17.00 to 18.00

Manganese Ore

(Nominal)

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55%	24 cents
South African, 52%	22 to 23 cents
South African, 49-51%	21 to 22 cents
South African, 44-47%	20 to 21 cents
Indian, 48-50%	22 cents
Brazilian, 46-48%	18 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$35.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	$35.00
Joliet and East Chicago	**47.00**
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

Burned, 9 x 4½ x 2½	$61.50
Unburned, 9 x 4½ x 2½	52.00

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$26.00
Pittsburgh, bassemer	26.00
Youngstown	26.00
Cleveland	26.00
Philadelphia	31.75
Chicago	26.00 to 28.00
Forging, Chicago	**33.00**
Forging, Pittsburgh	33.00
Forging, Philadelphia	37.75

SHEET BARS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00
Chicago	28.00

SLABS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	38.00

SKELP

All grades, Pittsburgh	1.50c to 1.60c

Ferroalloys

(In dollars, except Ferrochrome)

Ferromanganese, 78-82%, tidewater, duty paid	$68.00
Ferromanganese, del. Pittsburgh	73.24
Spiegeleisen, 19-20%, domestic fur. spot†	25.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(The above for spot carlots. Contract price $5 a ton less).	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis; 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic per ton carload, 23-26% f.o.b. Anniston, Ala.; 24%, $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60 per cent. per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molybdate, lb. cont.	0.80

†Carloads. Differentials apply to quant.

Fluorspar

85 and 5 per cent grade

Washed gravel, f.o.b. Ill., Ky., net ton car loads	$12.00
Washed gravel, import duty paid tide, gross ton	18.50

Pig Iron

Movement Is Well Sustained, Though New Buying Subsides—Southern Stack Going In

PIG IRON PRICES, PAGE 54

Pittsburgh—Two or three small inquiries for foundry iron, which do not aggregate more than 500 tons, are the extent of recent developments. Bessemer irons are moving slowly, with ingot mold demand falling to a point under a month ago. Iron and steel castings for an Ohio river lock and two Allegheny river locks will take 800 tons. The Sharpsville, Pa., merchant stack will be banked this week but will resume some time in November. It was stated previously that the furnace would be blown out. Foundry iron quotations generally begin at $15, base, Pittsburgh district furnace, but competition is sharp and final negotiations are closed under this figure. Nominally, malleable and bessemer grades are based on $15, with basic around $14.

Boston—Domestic pig iron producers are holding prices relatively firm in view of the fact that foreign iron, notably Dutch, is being offered under $14, delivered, at points near Providence, R. I. More than 2000 tons of this iron arrived at Providence, recently. Sales are light. The Everett, Mass., maker's minimum of $16, furnace, holds; with Buffalo at $14, furnace; and Pennsylvania, $16.50, delivered, at southern New Englant points.

New York—Consumers show a disposition to hold off on requirements until after elections. With few exceptions, current orders are confined to car lots. Buffalo iron is $14, furnace, with some orders up to $14.50.

Philadelphia—Award of 7000 tons of gray forge iron by the Reading Iron Co. to an eastern Pennsylvania furnace, features the market. Foundry iron prices have been reduced 25 cents a ton, No. 2 now being quoted $13.51 to $13.76, delivered, Philadelphia.

Buyers report offers of Manchurian iron at $11.75, duty paid, f.o.b. Philadelphia, although the analyses were not detailed. The Swedeland, Pa., blast furnace is expected to blow in about Nov. 15.

Buffalo—Pig iron purchases are declining but shipments are holding up well, near the best level of six months or more. The local price situation is steady.

Cleveland—Shipments to automotive foundries have increased, the most encouraging feature of the market during the week. They have been lagging here ever since buying improved late in September. Emphasis now is on shipments in general, as the majority of foundries have covered for the fourth quarter. The movement this month is likely to average 50 per cent above that of September. Buying is quieter, furnace interests here having booked approximately 3000 tons during the week, at unchanged prices.

Cincinnati—Small pig iron orders continue active with specifications on contracts holding to an improved rate. One lot of 500 tons, sold to an Indiana melter, and one of 300 tons to a southern Ohio consumer, revealed a trend toward firmer prices on northern iron.

St. Louis—October has fallen below September, in new pig iron orders, but is ahead in shipments. Sales here in the past week amounted to less than 1000 tons.

Chicago—Pig iron demand generally is unchanged. Shipments and new business are holding gains accumulated over the past two months, although little additional increases are noted. Inquiry remains fairly active but in a number of instances action is deferred. Prices are fairly steady at $15.50, furnace, for No. 2 foundry and malleable.

Birmingham, Ala.—Republic Steel Corp. is lighting its No. 2 blast furnace at Thomas, Ala. New orders are slow.

Toronto, Ont. — Sales are on the upgrade, but production continues light, furnaces filling orders from stock. Prices are firm.

Ore Stocks Lower, with Consumption Rising

Iron Ore Prices, Page 54

Cleveland—Stocks of Lake Superior iron ore at lower lake ports and furnaces Oct. 1 were 5,648,000 tons less than on the comparable date last year, a favorable indication. Last year, however, at this time ore was being consumed at the rate of 1,400,000 tons, compared with 697,185 tons in September. Against this, however, must be considered the fact that last year consumption was beginning to decline, while the trend at this time is upward. The Lake Superior Iron Ore association's current report:

	Tons
Consumed in August	606,961
Consumed in September	697,185
Increase in September	90,224
Consumed in September, 1931	1,470,219
On hand at furnaces Oct. 1, 1932	27,082,512
On Lake Erie docks Oct. 1, 1932	5,241,016
Total at furnaces and Lake Erie docks Oct. 1, 1932	32,323,528
Total Oct. 1, 1931	37,971,649

Coke

Beehive Furnace Grades Easier—Eastern Shipments Stimulated by Radiator Orders

COKE PRICES, PAGE 54

Pittsburgh—Distress offerings of furnace coke are being made occasionally at $1.85 and $1.75, although Connellsville beehive oven coke may be quoted $1.90 to $2.10, including the bulk of recent sales closed at $2. Foundries are taking less by-product coke after some fairly good specifications earlier in October. One interest moved over 40 carloads of by-product coke but now is finding the market dull. Foundry coke is nominally $2.75 or $4.25, depending upon grade.

New York—Resumption of operations at the Bayonne, N. J., plant of the American Radiator Co. has stimulated specifications for metallurgical coke. An improvement also is noted in shipments to other manufacturers of heating equipment. Prices are unchanged.

Cincinnati — By-product foundry coke shipments this month will be considerably heavier as demand continues to improve. Stocks are low.

Chicago—Shipments of by-product foundry coke are holding at the recent improved rate and will show a fair gain for this month compared with September. Activity in heating coke is spotty as a result of fluctuating weather conditions.

St. Louis—Deliveries to stove and jobbing foundries continue to lead in the movement of coke. New orders are small; the practice of stocking up against cold weather apparently has been abandoned. Shipments from Alabama so far this season exceed by a considerable margin those at the same period a year ago.

Birmingham, Ala.—The market for coke appears brighter. Production here is now above 33 per cent.

Scrap

Slow Buying and Ample Supply Bringing Weakness — Some Prices Are Lower

Chicago—Steel and iron scrap continues slow, buying recently being maintained in the small volume of the preceding several weeks and prices showing no marked changes. Mills appear to be awaiting a more definite indication of increased scrap requirements in the future before making additional commitments, being liberally supplied from stocks. Recent railroad lists are fairly steady but only a small portion is being sold. Heavy melting steel holds at $5.75 to $6 for the sixth consecutive week.

Boston—Scrap buying is dull and on several grades prices are slightly easier. Textile cast varies widely, with $7.50, delivered, paid for selected material by a stove foundry, to $6.50 for other points. No. 1 steel

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	6.50 to 7.00
Boston, dealers	3.50 to 3.75
Buffalo, No. 1	7.50 to 8.00
Buffalo, No. 2	6.25 to 6.75
Chicago	5.75 to 6.00
Cleve., No. 1	7.00 to 7.50
Cleve., No. 2	6.00 to 6.50
Det., No. 1 deal.	5.75 to 6.25
Det., No. 2 deal.	4.50 to 5.00
E. Pa. del. mill	7.00 to 7.50
E. Pa., No. 2 del.	5.50 to 6.00
N. Y. deal. R. R.	4.50 to 4.75
N. Y. deal, No. 2	3.50
N. Y. deal. yd.	2.50 to 3.00
Pitts. No. 1	9.00 to 10.00
St. L. No. 1 sel.	6.00 to 6.50
Federal, Ill.	5.50 to 6.00
Granite City, Ill.	5.00 to 5.50
Valleys, No. 1	9.00 to 9.50

COMPRESSED SHEETS

Buffalo, dealers	6.25 to 6.75
Chi. (Factory)	4.25 to 4.75
Cleveland	6.50 to 7.00
Detroit, dealers	5.50 to 6.00
E. Pa. new mat.	5.00 to 5.50
Pittsburgh	9.00 to 9.50
Valleys	8.50 to 9.00

BUNDLED SHEETS

Buffalo	4.25 to 4.75
Cinci., del.	4.25 to 4.75
Cleveland	4.50 to 5.00
Eastern, Pa.	5.00
Pittsburgh	8.00 to 8.50
St. Louis	1.50 to 2.00

SHEET CLIPPINGS LOOSE

Chicago	2.00 to 2.50
Cincinnati	2.00 to 2.50
Detroit, dealers	2.00 to 2.50
St. Louis	1.50 to 2.00

STEEL RAILS SHORT

Birmingham	7.50 to 8.50
Boston, dealers	4.00 to 4.50
Buffalo	9.50 to 10.00
Chicago (3 ft.)	8.00 to 8.50
Chicago (2 ft.)	8.50 to 9.00
Cinci., del.	9.00 to 9.50
Detroit, deal.	8.00 to 8.50
Pitts. (open-hearth, 3 ft. and less)	10.50 to 11.00
St. Louis	7.50 to 8.00

STOVE PLATE

Birmingham	5.50 to 6.00
Boston, dealers	2.50 to 3.00
Buffalo	7.75 to 8.00
Chicago, net	5.75 to 6.25
Cinci., deal. net	3.50 to 4.00
Det., net deal.	3.00 to 3.50
Eastern Pa.	6.00 to 6.50
N. Y., deal. mill	2.50 to 3.00
St. Louis	5.50 to 6.00

COUPLERS, SPRINGS

Buffalo	9.00 to 9.50
Chicago	6.50 to 7.00
Eastern Pa.	9.00 to 9.50
Pittsburgh	9.50 to 10.00
St. Louis	6.00 to 6.50

ANGLE BARS—STEEL

Chicago	7.00 to 7.50
St. Louis	6.00 to 6.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	9.00 to 9.50
Cleveland bil. and bloom crops	10.00 to 11.00
Eastern Pa.	9.00 to 9.50
Pittsburgh billet bloom crops	11.00 to 11.50
Pitts., sheet bar crops	11.00 to 12.00

FROGS, SWITCHES

Chicago	6.00 to 6.50
St. Louis	6.00 to 6.50

SHOVELING STEEL

Chicago	5.75 to 6.00
Cleveland	5.75 to 6.00
St. Louis	5.00 to 5.50

RAILROAD WROUGHT

Birmingham	4.50 to 5.50
Boston, dealers	1.00 to 1.50
Buffalo, No. 1	4.50 to 5.00
Buffalo, No. 2	7.00 to 7.50
Cinci., No. 2	5.75 to 6.25
Chi., No. 1, net	5.00 to 5.50
Chicago, No. 2	5.75 to 6.00
Eastern Pa.	7.00 to 7.50
N. Y., No. 1, deal.	2.50 to 3.00
Pitts., No. 2	9.00 to 10.00
St. Louis, No. 1	3.50 to 4.00
St. Louis, No. 2	5.00 to 5.50

SPECIFICATION PIPE

Boston	3.00 to 4.00
Eastern Pa.	7.00 to 7.50
N. Y., deal	2.00 to 2.25

BUSHELING

Buffalo, No. 1	6.25 to 6.75
Chicago, No. 1	4.00 to 4.50
Cinn., No. 1 dl.	4.00 to 4.50
Cinn., No. 2	2.50 to 3.00
Cleve., No. 2	3.00 to 3.50
Det., No. 1 new deal	4.75 to 5.25
St. L., No. 1	3.00 to 3.50
Val. new No. 1	8.25 to 9.75

MACHINE TURNINGS

Birmingham	3.00 to 4.00
Boston, dealers	0.75 to 1.00
Buffalo	3.75 to 4.25
Chicago	3.00 to 3.50
Cin., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit	3.00 to 3.50
Eastern Pa.	3.50 to 4.00
N. Y., deal	1.35 to 1.50
Pittsburgh	5.75 to 6.25
St. Louis	1.50 to 2.00
Valleys	6.75 to 7.25

BORINGS AND TURNINGS
For Blast Furnace Use

Boston, dealers	.75 to .90
Buffalo	3.75 to 4.25
Cinn., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit, deal.	3.50 to 4.00
Eastern Pa.	3.50 to 3.75
N. Y., deal	1.35 to 1.50
Pittsburgh	6.25 to 6.75

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.00 to 4.00
Boston, chem.	5.50 to 6.00
Boston, dealers	1.00 to 1.25
Buffalo	4.25 to 4.50
Chicago	4.00 to 4.50
Cinn., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit, deal.	3.50 to 4.00
Eastern Pa.	3.50 to 3.75
E. Pa., chem.	8.00 to 10.50
N. Y., deal	1.00 to 1.50
Pittsburgh	6.25 to 6.75
St. Louis	2.75 to 3.25

PIPE AND FLUES

Cinn., deal.	3.25 to 3.50

RAILROAD GRATE BARS

Buffalo	4.00 to 4.50
Chicago, net	5.00 to 5.50
Cincinnati	4.00 to 4.50
Eastern Pa.	5.50 to 6.00
N. Y., deal.	3.50 to 4.00
St. Louis	4.50 to 5.00

FORGE FLASHINGS

Boston, dealers	2.00 to 2.50
Buffalo	5.50 to 6.00
Cleve. ov. 10 in.	6.00 to 6.50
Detroit	4.00 to 4.50

FORGE SCRAP

Boston, dealers	1.75 to 2.00
Chicago	7.00 to 7.50
Eastern Pa., del.	5.00 to 5.50

ARCH BARS, TRANSOMS

Chicago, net	5.00 to 5.50
St. Louis	5.00 to 5.50

AXLE TURNINGS

Boston, deal	5.50 to 6.00
Buffalo	6.50 to 7.00
Chi., elec. fce.	4.50 to 5.00
Cleveland	5.50 to 6.00
Eastern Pa., del.	7.00
Pittsburgh, O. H.	7.75 to 8.25
St. Louis	3.50 to 4.00

STEEL CAR AXLES

Birmingham	9.00 to 9.50
Boston, ship. pt.	6.00 to 6.50
Buffalo	10.00 to 10.50
Chicago, net	8.50 to 9.00
Eastern Pa.	14.50
St. Louis	9.00 to 9.50

SHAFTING

Boston, ship. pt.	6.50 to 7.00
N. Y., deal.	6.50 to 7.00
St. Louis	7.50 to 8.00
E. Penna.	11.00 to 12.00

CAR WHEELS

Birming., iron	7.00 to 7.50
Boston, iron deal.	3.50 to 4.00
Buffalo, iron	7.00 to 8.00
Buffalo, steel	8.50 to 9.00
Chicago, iron	7.00 to 7.50
Chi., rolled steel	6.50 to 7.00
Cincinnati iron	6.25 to 6.75
E. Pa. steel	9.00 to 10.00
E. Pa. iron	9.00 to 9.50
Pitts., iron	8.50 to 9.00
Pitts., steel	9.50 to 10.00
St. Louis, iron	5.00 to 5.50
St. Louis, steel	7.00 to 7.50

NO. 1 CAST SCRAP

Birmingham	7.00 to 7.50
Buffalo (Mach.)	10.00 to 10.25
Buffalo, cupola	9.00 to 9.50
Boston, textile	7.00 to 7.50
Boston No. 2	3.00 to 3.50
Chi., mach. net	6.50 to 7.00
Chi., railroad, net	6.00 to 6.50
Chicago, agri., net	5.25 to 5.75
Cinn., mach. cup.	7.00 to 7.50
Cleve. cupola	7.00 to 8.00
Det., net deal.	6.50 to 7.00
E. Pa. cupola	9.00 to 9.50
N. Y., cup. deal.	5.50 to 6.50
N. Y., del. local foundries	8.00 to 8.50
Pitts., cupola	9.50 to 10.00
San Fran., del.	13.50 to 14.00
Seattle	4.50 to 6.50
St. L. No. 1 ma.	6.50 to 7.00
St. L., No. 1	6.00 to 6.50

HEAVY CAST

Boston, del.	4.00 to 4.25
Bost., mach. cast	7.00 to 7.50
Buffalo, break	6.50 to 7.00
Cleve., break	4.50 to 5.00
Detroit, auto. net deal.	7.00 to 7.50
Det., break., dl.	5.00 to 5.50
Eastern Pa.	8.50 to 9.00
N. Y. No. 1, dl.	5.00 to 5.50
N. Y. break, dl.	4.75 to 5.25
Pittsburgh	8.25 to 8.75

MALLEABLE

Boston Consum.	7.50 to 8.00
Buffalo	8.00 to 8.50
Chicago, agri.	5.00 to 5.50
Chicago, R. R.	6.50 to 7.00
Cinci., R. R., del.	7.50 to 8.00
Cinci., agri. del.	7.00 to 7.50
Cleveland, rail	7.50 to 8.00
Det. auto deal.	5.00 to 5.50
St. Louis, rail	4.50 to 5.00

RAILS FOR ROLLING
5 feet and over

Birmingham	7.50 to 7.75
Boston, deal.	5.00 to 5.50
Buffalo	7.00 to 7.50
Chicago	8.25 to 8.75
Eastern Pa.	9.50
New York dealer	4.25 to 4.75
St. Louis	7.25 to 7.75

LOCOMOTIVE TIRES

Chicago, cut	7.00 to 7.50
St. L., No. 1	5.00 to 5.50

LOW PHOS. PUNCHINGS

Chicago	7.50 to 8.00
Buffalo	9.00 to 9.50
Eastern Pa.	9.50 to 10.00
Pittsburgh	10.75 to 11.25

continues $5, Worcester, No. 1 cast is off 25 cents and on an 800-ton barge shipment to the eastern Pennsylvania district, including No. 2 steel, No. 2 cast and stove plate, prices were generally off 25 cents.

New York—Scrap prices are unchanged since the recent reduction in No. 1 steel for barge loading. Buying is light, although shipments against contracts are going forward in small lots steadily.

Philadelphia—A substantial tonnage of blast furnace borings and turnings has been purchased by a Conshohocken, Pa., consumer, at $3.50 to $3.75, delivered. This is the first important purchase of this material in this district in a number of months and is believed to presage the blowing in of the Swedeland blast furnace within the coming month. As a result of this purchase, prices on mixed borings and turnings and cast iron borings have been advanced slightly. Light miscellaneous buying otherwise includes 200 tons of unprepared steel scrap for Bethlehem, Pa. Prices generally appear easier, although there have been no reductions, except in stove plate, now $6 to $6.50, delivered.

Pittsburgh—The scrap market has reverted to more pronounced inactivity, even more so than during July. No. 1 heavy melting steel on a railroad list being brought into Pittsburgh last week at $10 makes the market quotable at a wider range of $9 to $10, though the single price average of $9.50 is unchanged.

For 400 tons of structural steel in the Boston, Pa., bridge, a bid of $1 by J. P. Ancarana, Pittsburgh, has been acceped by Allegheny county commissioners. Award specifies that the bidder demolish the bridge. Other bidders wanted as much as $15,341 to demolish the structure.

United Iron & Metal Co., Pittsburgh, has been awarded about 1400 tons of various scrap items by the Pittsburgh Railways Co., from 200 street railway cars, underframes, wheels and axles.

Cleveland—Continued lack of buying has brought weakness on several grades of iron and steel scrap at Cleveland and Youngstown. Both grades of heavy melting at Cleveland are reduced 50 cents a ton, as also are pressed and bundled sheets, pipes and flues and forge flashings. All grades of scrap at Youngstown were reduced twice in the week, 25 cents each time.

Buffalo—Tonnage inquiry is lacking but small lots of several grades of scrap have been moving at prices near the top of recently quoted ranges. Stove plate, short steel rails and No. 1 machinery cast are active grades. Prices continue firm.

American Steel & Iron Co., Boston, has bought the Buffalo & Erie interurban line at receiver's auction, subject to court confirmation. Salvage is estimated to include 8500 tons of steel rails, 500 tons bridge steel, 300 tons copper, substation equipment and miscellaneous material. The successful bid was $78,700. No bids were made for the line as a going concern.

Detroit—Because blast furnace grades are in greater demand, especially for shipment out of the district. No. 2 old busheling has risen sharply to a range of $2.75 to $3.25. Also moving against the general trend are borings and mixed borings and turnings, both of which now are $3.50 to $4. The market has a slightly easier tone and needs another buying wave.

Cincinnati—The market for iron and steel scrap has turned dull, without weakening in prices. Recent offerings of railroads went at bids slightly higher than last month.

St. Louis—The recent advance in iron and steel scrap prices is holding on most grades, despite quiet demand and small sales. In the case of a number of items exact values are uncertain as no test has been had. On all small lot sales reported recently published quotations have prevailed.

Birmingham, Ala—Prices show strength, though actually unchanged. Producers and consumers alike are marking time.

Toronto, Ont.—Wider range buying is appearing in iron and steel scrap. While special grades such as machinery cast, malleable and stove plate are still the most active, sales of the past week included heavy melting steel, wrought iron and steel axles and a small order for boiler plate.

Equipment

Major Purchases Deferred—Fair Volume of Small Orders

Pittsburgh—Order from American Sheet & Tin Plate Co. for mill installations at Vandergrift, Pa., and Gary, Ind., has not yet been made. Apparently, there is still prospect that this business will be closed on shortly. Youngstown Sheet & Tube Co. is buying enameling ovens and tanks for its conduit finishing department, Youngstown, O., which was damaged by fire recently. The company has decided to make no commitments on pipe threading or machinery in this division. Steel mill equipment suppliers continue to hold a large number of unannounced machines and special equipment off the market pending a more favorable buying attitude. The rate of inquiries in the market is no better and actual orders, aside from scattered individual pieces of machinery, are absent. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has noted a few more inquiries and orders from the steel industry.

Chicago—While a general disposition to postpone major purchases of machine tools and plant equipment is noted, occasional signs of activity provide some encouragement to sellers. Demand for small tools declined steadily during summer months, but recently has turned upward in keeping with a moderate expansion in manufacturing activities. Sales of larger equipment at least are holding their own, and occasional increases are reported by some sellers. Purchases of machine tools usually involve individual items but the total of such business recently has been slightly in excess of activity during the preceding several months. Inquiry generally is unchanged, but a fair volume of work is pending on which action is expected to be taken before the end of the year.

Cleveland—The market for equipment continues dull, with no large orders in prospect. Inquiry is fair and a few machines are being placed among a scattered list of buyers. It appears to be a well established conviction that a number of innovations in design of machines and equipment have passed through the drawing board stage and are ready for production with the first concerted advance of business. Ohio Locomotive Crane Co., Bucyrus, O., has been awarded contract for one locomotive crane for Mountain View, Calif., naval station.

Worcester, Mass. — Demand for machine tools and equipment continues to drag, with buying generally limited to individual sales from widely diversified industries. Demand for parts, especially in the textile field, holds well. Automotive buying has been light with little new equipment bought for model changes, although some grinding machines have been placed.

New York—Dullness continues in the demand for machinery and equipment. Inquiry is light and buying limited to one or two tools, such contracts being placed only when urgently needed for some special production job.

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.25c, Conn., for copper

SHEETS	
Yellow brass (high)	12.50
Copper, hot rolled	15.37½
Lead sheets, cut, to jobbers	7.00
Zinc sheets (100-lb. base)	9.00
TUBES AND PIPES	
Seamless yellow brass (high)	15.25
Seamless copper	14.37½
RODS	
Yellow brass (high, full turning)	10.25
Naval brass	11.37½
ANODES	
Copper, untrimmed	12.25
WIRE	
Yellow brass (high)	12.50

Old Metals

Dealers' buying prices, cents lb.

	No. 1 Composition	Red Brass
New York	3.00 to 3.25	
Chicago	3.00 to 3.25	
Cleveland	3.00 to 3.25	
St. Louis	2.50	
HEAVY YELLOW BRASS		
New York	2.00 to 2.25	
HEAVY COPPER AND WIRE		
New York	3.75 to 4.00	
Chicago, No. 1	3.75 to 4.00	
Cleveland	3.50 to 3.75	
St. Louis	2.75	
COMPOSITION BRASS BORINGS		
New York	2.87½ to 3.12½	
YELLOW BRASS TUBING		
Cleveland	2.00 to 2.25	
LIGHT COPPER		
New York	3.25 to 3.50	
Chicago	2.75 to 3.00	
Cleveland	3.00 to 3.25	
St. Louis	2.50	
LIGHT BRASS		
Chicago	1.75 to 2.00	
Cleveland	1.50 to 1.75	
St. Louis	1.50	
LEAD		
New York	2.00 to 2.25	
St. Louis	2.00	
ZINC		
New York	1.12½ to 1.37½	
Cleveland	1.00 to 1.25	
St. Louis	1.25	
ALUMINUM		
Clippings, new, soft, Cleve.	9.00 to 10.00	
Clippings, hard, Cleveland	7.50 to 8.50	
Borings, Cleveland	3.00 to 3.50	
Mixed cast, Cleveland	4.00 to 4.50	
Mixed cast, St. Louis	3.00 to 3.25	

Secondary Metals

Remelt aluminum No. 12	7.50 to 8.50
Brass ingot, 85-5-5-5	6.25

Metals

Little Improvement Shown in Demand—Copper Prices Lack a Test—Lead Quieter—Tin Eases

New York — Metal consumers showed only passive interest in the market during the past week. Lack of sufficiently important developments within the metal trade itself and with regard to the general business and political situation gave consumers little incentive to enter the market more actively. Prices showed little change with the exception of tin.

Copper — Producers maintained their quotations on the basis of 6.25c, Connecticut, on electrolytic metal for delivery through the first quarter of 1933. Insufficient demand to furnish an adequate test of the market appeared, however, and prices were largely nominal. Resale offerings were made during the week at as low as 5.62½c which were not entirely absorbed. Demand for copper and brass products held to the improved rate of the past six weeks but brass ingots moved slowly. Copper and brass scrap prices were slightly easier.

Zinc—Buying was extremely light. Most sellers held prices to the basis of 3.05c, East St. Louis, but some business was done at 3.00c. Producers of high-grade zinc have maintained a firm position recently, quoting 4.50c, delivered.

Lead—Sales were in fair volume early in the week at both 3.00c and 3.05c, New York, the former price being quoted by the American Smelting & Refining Co. Demand quieted down later in the week with most sellers willing to do business at 3.00c. October consumer requirements now are covered but considerable buying remains to be done for November needs.

Tin—A sharp break in sterling exchange early in the week had a depressing effect on the tin market. This unsettlement resulted in a more hesitant attitude on the part of consumers and the prices quoted were largely nominal. Price differentials on futures narrowed considerably.

Antimony—Prices remained unchanged with demand still slow.

Aluminum—Secondary metal was firm. Virgin metal was quiet and unchanged.

Coke By-Products Quiet

New York—Demand for coke by-products is unchanged, continued light output acting as a firming factor. Distillates are moving in small lots. Some contracting for naphthalene has been done at the new prices.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.153 to 0.173
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.05

Quicksilver Higher

New York—Quicksilver prices are firmer and demand is more active. Sellers now are quoting round lots at $48, a virgin flask of 76 pounds, against $47 a week ago; and $49, a flask in small lots, for prompt delivery, also up $1 from previous quotations.

Soviet Russia in August imported from the United States nine engine lathes and six milling machines, valued at $77,486.

Nonferrous Metal Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
Oct. 15	6.25	6.37½	6.00	24.30	24.55	3.02½	2.90	3.05	22.90	5.62½	35.00
Oct. 17	6.25	6.37½	6.00	24.40	24.65	3.02½	2.92½	3.05	22.90	5.62½	35.00
Oct. 18	6.25	6.37½	6.00	24.30	24.55	3.02½	2.92½	3.05	22.90	5.62½	35.00
Oct. 19	6.25	6.37½	6.00	24.10	24.25	3.02½	2.92½	3.05	22.90	5.62½	35.00
Oct. 20	6.25	6.37½	6.00	23.97½	24.05	3.00	2.92½	3.02½	22.90	5.62½	35.00
Oct. 21	6.00	6.37½	5.87½	23.87½	23.92½	3.00	2.90	3.02½	22.90	5.62½	35.00

Pacific Coast

Golden Gate Bridge Tonnage Let with Large Saving from Former Figures—Coast Business Grows Steadily, Largely Public Work—Seattle Water Project Proceeds on Federal Aid

San Francisco—(*By Air Mail*)—The feature of market, during the past week, was the award of the largest structural shape project ever placed on the Pacific Coast. This involved 75,000 tons for the main spans of the Golden Gate bridge and was obtained by McClintic-Marshall Corp. In addition, bids were opened on 37,700 tons of steel for suspension cables and approach spans. Bids were originally opened on the entire project June 17, 1931. Due to litigation over legality of the bonds, awards were held up indefinitely. The bridge district, after all legal difficulties were cleared up, decided to call for new bids on all portions of the work with the exception of the main spans.

The largest single item on which bids have just been opened is 28,000 tons of steel cables. John A. Roebling Sons Co. is low bidder on the cable and the Bridge Builders Inc. is low on 9700 tons for the approach spans. The new bids were close to $600,000 below the former figures.

Reinforcing bar awards were the largest since May and aggregated 1854 tons. Truscon Steel Co. took 300 tons for Mare Island, Calif., and Gunn, Carle & Co. booked 300 tons for a medical school in San Francisco. Pacific Coast Steel Corp. secured 750 tons for a breakwater at Santa Monica, Calif. Bids were opened on 5058 tons for the Golden Gate bridge and on 300 tons for the San Gabriel Dam No. 2, Los Angeles. Bids will be called for about Dec. 1 for 2000 tons for the Hoover dam and on 5000 tons for the same project about March 1, 1933. New inquiries include 500 tons for a mausoleum at San Mateo, Calif. Prices in the San Francisco district have weakened somewhat and 2.40c, base, on carload lots is general on out-of-stock material.

Central Iron & Steel Co. was awarded 760 tons of plates for toe protectors for the Santa Monica breakwater. Unnamed interests took 100 tons for tanks for Vernon, Calif. Bids have been opened on 100 tons for a gas holder at Ukiah, Calif., and bids will be opened Oct. 25 for 400 tons for the Mare Island navy yard. Prices hold at 2.00c, c.i.f.

The structural shape market was by far the most active, and in addition to the Golden Gate bridge tonnage over 4200 tons was placed. Bethlehem Fabricators Inc. took 200 tons and 114 tons respectively for post offices in Marysville and Oroville, Calif. This is the first time this eastern concern has entered the Pacific Coast market. Consolidated Steel Corp. secured 260 tons for a bridge over San Gabriel river in California and 250 tons for a motion picture stage in Universal City, Calif. Pheonix Iron Co. booked 575 tons of H columns for the Santa Monica breakwater. Bids have been opened on 1041 tons for the Kern river bridge, Bakersfield, Calif. Bids open Nov. 16 for 350 tons for psychopathic ward for the San Francisco hospital. Bids will be called for about July 1, 1933, for 7500 tons for a powerhouse for the Hoover dam and on 1500 tons for three 500-ton traveling cranes. Standard shapes hold at 2.10c, c.i.f., wide flange material 2.20c.

The United States Pipe & Foundry Co. secured 228 tons of cast iron pipe for Fresno, Calif. Unnamed interests took 125 tons for Benton

(*Please turn to Page* 60)

Steel in Europe

Less Continental Competition Helps British Trade

London—(*By Cable*)—Trade in iron and steel production continues dull and exports of pig iron are negligible. The brightest spot in the situation is the reduction in Continental competition. Some further Russian engineering contracts have been booked. Export of Scottish sheets is in fair volume. Steelmakers are negotiating the establishment of export rebates to rerollers.

The Continent reports more activity in the market and firmer prices, especially on bars, plates and sheets. Germany has booked some substantial orders for wire and some contracts for material to Russia.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Oct. 20

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON		£ s d		£ s d L s d
Foundry, 2.50-3.00 Silicon	$ 9.95	2 18 6	$8.76 to $9.25	1 16 0 to 1 18 0
Basic bessemer	9.18	2 14 0*	6.81	1 8 0
Hematite, Phos. .03-.05	10.03	2 19 0	.....	.....
SEMIFINISHED STEEL				
Billets	$16.58	4 17 6	$9.49	1 19 0
Wire rods, No. 5 gage	25.50	7 10 0	21.90	4 10 0
FINISHED STEEL				
Standard rails	$26.35	7 15 0	$26.77	5 10 0
Merchant bars	.93c	6 2 6	.55c to .56c	2 10 0 to 2 11 0
Structural shapes	1.12c	7 7 6	.46c	2 2 0
Plates, †¼ in. or 5 mm.	1.33c	8 15 0	.66c	3 0 0
Sheets, black, 24 gage or 0.5 mm.	1.22c	8 0 0	1.21c to 1.24c	5 10 0 to 5 12 6
Sheets, gal., 24 gage, corr.	1.52c	10 0 0	1.51c	6 17 6
Bands and strips	1.18c	7 15 0	.66c to .69c	3 0 0 to 3 2 6
Plain wire, base	1.44c	9 10 0	1.18c	5 7 6
Galvanized wire, base	1.75c	11 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.67c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.72	0 16 0	$3.20	0 13 2

British ferromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

		£ s d		French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$ 9.95	2 18 6	$ 8.08	205(2)	$ 8.34	300	$16.42	69	
Basic bessemer pig iron	9.18	2 14 0*	6.90	175(1)	7.51	270	17.97	75.50	
Furnace coke	2.04	0 12 0	4.89	124	3.48	125	4.57	19.20	
Billets	17.00	5 0 0	14.58	370	10.43	375	22.97	96.50	
Standard rails	1.25c	8 5 0	1.25c	697	1.50c	1,150	1.37c	127	
Merchant bars	1.00c	6 12 6	.95c	530	.60c	460	1.19c	110	
Structural shapes	1.33c	8 15 0	.99c	550	.57c	435	1.16c	107.50	
Plates, †¼-in. or 5 mm.	1.37c	9 0 0	1.17c	650	.72c	550	1.37c	127	
Sheets, black	1.25c	8 5 0§	1.44c	800‡	.85c	650‡	1.56c	144‡	
Sheets, galv., corr., 24 ga. or 0.5 mm.	1.52c	10 0 0	2.83c	1,570	1.64c	1,260	4.00c	370	
Plain wire	1.44c	9 10 0	2.03c	1,130	1.69c	1,300	1.92c	178	
Bands and strips	1.44c	9 10 0	1.04c	580	.83c	640	1.37c	127	

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basis price.
British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel.

Here and There In Industry

NEWTON STEEL CO., Monroe, Mich., moved its general offices Oct. 21 from Detroit to 3100 East Forty-fifth street, Cleveland. A sales office will be maintained at 1610 Fisher building, Detroit, and the Chicago sales office will be continued in the Daily News building. This move brings the executive offices into closer contact with those of the Corrigan, McKinney Steel Co. at Cleveland, following passing of control to the latter company.

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American Hoist & Derrick Co., St. Paul, has appointed Stanley H. Smith, Midland Bank building, Cleveland, its railroad representative in the Cleveland district.

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Minneapolis-Honeywell Regulator Co., Minneapolis, is placing on the market several new devices for control of temperature, humidity and refrigeration.

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Vivian Mfg. Co., St. Louis, manufacturer of ice and refrigerating machinery, has moved into its new plant recently completed at 4136 Folsom avenue. L. R. Barber is president.

□ □ □

Sidney Machine Tool Co., Sidney, O., has placed the exclusive agency for its tritrol and montrol lathes in the New England territory with the Austin-Hastings Co. Inc., Parkett machinery division, Cambridge, Mass.

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Star Machine & Tool Co., Cleveland, die and toolmaker, has appointed L. J. Van Arsdell sales representative in the Detroit district, with offices at 2720 Union Guardian building.

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Ingersoll-Rand Co., 11 Broadway, New York, has taken over exclusive rights to market SKF drill steel throughout the world under the brand IR-SKF. This steel has been developed by the technical departments of the two companies.

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Allis-Chalmers Mfg. Co., Milwaukee, has received an order for more than $500,000 from the New York city board of transportation for electrical control equipment for the new Eighth avenue subway.

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Young Radiator Co., Racine, Wis., finds demand for copper heat transfer products is heavier than during the first half of the year, production having been increased recently. A new line of cooling equipment for rooms, restaurants and public buildings has been added.

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Oil City Boiler Works, Oil City, Pa., has been placed in the hands of Harry W. Dunn as receiver, who has been authorized to continue operation. Assets are estimated at $678,158 and liabilities at $340,000, including judgments for $100,000.

□ □ □

Sun Machinery Co. Inc., 35 Van Buren street, Newark, N. J., dealer in new and used machine tools for many years, has decided to liquidate and retire from business. Its stock will be sold at auction Oct. 25, the auction being under management of Samuel T. Freeman & Co., auctioneers.

□ □ □

Grunow Corp., 4127-51 George street, Chicago, has been incorporated in Delaware with capital of $300,000. The company will confine its initial activities to the manufacture of electric refrigerators. William C. Grunow, formerly president of the Grigsby-Grunow Co., Chicago, manufacturer of radio equipment and refrigerators, is president of the Grunow Corp. Arthur C. Winnan is secretary, Mr. Grunow withdrew from the Grigsby-Grunow Co. in January, 1931. Some machine tools and equipment have been purchased but no date has been announced for commencement of production.

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Milwaukee Tool & Forge Co., Milwaukee, Pressed Products Co., Napoleon, O., and Saturn Electric Water Heater Co., Bryan, O., are planning to consolidate, in response to an offer by a citizens' committee from Defiance, O., seeking to put into use an idle plant in that city. Production will be concentrated in one plant and will include tools, pole line hardware, screw machine products, automobile stampings and steel tubing. Harold L. Schlesser, president of Pressed Products Co., is to be general manager. Directors will include W. D. Kyle, head of the Milwaukee company; C. J. Markey, president of the Saturn company; J. A. Otis, vice president of the Alemite Corp., Chicago.

Mirrors of Motordom

(*Concluded from Page* 19)

water from Buffalo for its open-hearth steel furnaces at the Great Lakes division in Detroit. Two of the six Great Lakes open hearths are active. . . . President Macauley of Packard says 2,000,000 cars are being junked this year, with less than 1,500,000 new ones to take their place. . . . Ratio of used car sales to new car sales in August was 244 to 100, according to the National Automobile chamber of commerce.

On the Pacific Coast

(*Concluded from Page* 59)

Field, Calif. Bids were opened Oct. 21 for 5715 tons for Los Angeles. This is the largest specification of the year. Pending business includes 400 tons for the El Capitan dam, San Diego, Calif.

Seattle Given a Loan

Seattle — Assurance of federal funds for Seattle's $1,800,000 water system improvement and extension was the feature of the week. It is expected bids will be invited in 30 days. While tonnages are not available, the project includes construction of a 50,000,000-gallon concrete reservoir and a large quantity of steel and cast iron pipe, 78, 16 and 24-inch. Alternate bids may be asked for concrete mains.

Awards include a 300 foot steel span in Carbon county to North Dakota Concrete Co., Minot, N. Dak., and the 435 foot Musselshell river bridge to Nolan Bros., Minneapolis. Northwest public works awards totaled $550,000 during the week. Willapa river, Washington, state bridge, bids Oct. 18, involves 350 tons of shapes and 100 tons of concrete bars.

Seattle contractors are figuring the immigration station at Honolulu, involving a large lot of shapes and reinforcing. For building jobs, about 100 tons of concrete bars are being shipped monthly from Seattle to the Hawaiian islands. Lehigh Structural Steel Co. is completing two 300-foot steel towers for station KOIN, Portland, Oreg., Dominion Construction Co. Ltd. has awarded steel subcontracts involved in the extension to the plant of the Columbia Grain Elevator Co. Ltd., 355 Burrard street, Vancouver, B. C. Reinforcing steel will be furnished by Evans, Coleman & Evans, Ltd. and machinery by the Vancouver Engineering Works, Ltd., Vancouver.

Spokane, has divided 137 tons of cast iron pipe, R. D. Wood & Co., Philadelphia, taking the 10-inch, and the 6 and 8-inch being booked by Pacific States Cast Iron Pipe Co., Provo, Utah.

Wholesale jobbers are holding their own, volume being fairly steady but in small lots, the entire list being in fair demand. Prices are steady and rather firm. There is no mill buying. German interests are reported offering to lay down new 40-pound rails here at $18 gross ton, duty paid, a cut of $2 in the last fortnight.

There are no developments in scrap. Material is accumulating in the country but there is no inducement to collect it at present. Local mills and dealers are overstocked and movement is at a standstill. The Orient needs supplies but cannot purchase at present low exchange.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

BRIDGEPORT, CONN.—Jelliff Mfg. Co., manufacturer of wire cloth and wire products, has placed a contract with O. F. Burghart, Bridgeport, for a 1-story addition 39 x 98 feet and 20 x 39 feet at its plant at Southport, Conn., costing about $30,000.

MT. CARMEL, CONN.—Benjamin Stewart & Sons Inc. has been incorporated to operate a jobbing foundry casting aluminum, brass and other nonferrous metals, by Benjamin Stewart, formerly associated with the Deoxidized Bronze Co., Bridgeport, Conn.

HOLYOKE, MASS.—Electric and gas department of the city, J. J. Kirkpatrick superintendent, is planning erection of a steel gas holder, costing about $17,500.

PROVIDENCE, R. I.—Farr & Read Co. Inc. has been incorporated with 1000 shares no par value to deal in machinery, by John M. Farr, 76 Lenox avenue, and associates.

New York

BUFFALO—Buffalo Pipe & Foundry Co. has bought a plant at Kenmore, a Buffalo suburb, and will occupy it in the near future. Increased production of cast iron pipe is planned, the new plant giving enlarged facilities.

BUFFALO—Worthington Pump & Machinery Corp. has given contract to H. K. Ferguson Co., Hanna Building Cleveland, for a 2-story pattern storage building 100 x 100 feet, costing $20,000.

MASPETH, N. Y.—Western Electric Co., 195 Broadway, New York, is building a 1-story plant addition 220 x 301 feet. P. Groves, 37 Eighty-fourth street, Jackson Heights, N. Y., is architect.

NEW YORK—Otis Elevator Co., New York, is low on the elevator plant for the court house at Albany, N. Y., at $79,250.

NEW YORK—International Supply Corp. has been incorporated with $40,000 capital to manufacture mechanical devices, by C. R. McNamee, 70 Pine street, New York.

NEW YORK—William Sayles Laundry Machinery Co. has been incorporated with $10,000 capital to manufacture laundry appliances, by H. T. Thurschwell, 51 Chambers street, New York.

NEW YORK—Gotham Smelting & Refining Co. has been incorporated with 200 shares no par value by H. M. Lewin, 274 Madison avenue, New York.

ROCHESTER, N. Y. — Hetzler Foundries has been incorporated with $50,000 capital to operate a casting foundry, by D. F. Fitzgerald, Rochester, N. Y.

New Jersey

BAYONNE, N. J.—Pharma Chemical Co. is having plans drawn for a new plant to cost $40,000.

BAYONNE, N. J.—American Radiator Co. has started its foundry on full time after six months idleness, returning 900 men to work, rebuilding its stocks.

GARFIELD, N. J.—Garfield Unitense Feeder Inc. has been incorporated with 2500 shares no par value to manufacture mechanical devices, by Nicholas F. Cimmino, Paterson, N. J.

JERSEY CITY, N. J.—A. A. A. Auto Wreckers has been incorporated with $100,000 capital to dismantle and scrap used automobiles.

JERSEY CITY, N. J.—Triplex Dry Cleaning Systems Inc. has been incorporated to manufacture dry-cleaning machinery, with $10,000 preferred stock and 1000 shares no par value, by Carl O. Hoffman, New York.

NEWARK, N. J.—Igoe Bros., 234 Poinier street, is taking bids for a 1-story wire mill building 90 x 225 feet, to cost about $28,500. A. Brock, 99 North Sixth street, is architect.

NEWARK, N. J.—Stock of new and used tools of the Sun Machinery Co. Inc., which is retiring from business, will be sold at auction Oct. 25 on the premises, 35 Van Buren street, by Samuel T. Freeman & Co., auctioneers.

Pennsylvania

CHARLEROI, PA.—Plant of the Charleroi Steel & Foundries Co., which was dissolved through receivership, has been bought by Youngstown, O., interests said to be planning the manufacture of stainless steel after the plant is refitted.

LANCASTER, PA.—Umbrella Tipping Machine Corp. has been incorporated with $6000 capital to manufacture machinery for the umbrella industry, by Lester W. Schotta, 719 North Prince street, Lancaster, Pa.

PHILADELPHIA — Bids will be opened Nov. 16 for a United States customs house for the port of Philadelphia.

PITTSBURGH—Dial Rock Co. has started work on a coal breaker costing about $100,000 on the property of the Mt. Lookout coal operation at Wyoming, Pa.

PITTSBURGH—United States engineers will close bids Nov. 3 for constructing the upper guide wall extension at lock No. 4, Natrona, Pa., on the Allegheny river.

PITTSBURGH—Treadwell Construction Co., Midland, Pa., has submitted the low bid for construction of 100 steel pipe nipples, 24 inches long, for the United States engineers, St. Louis.

PITTSBURGH—United States engineers here will open bids Nov. 7 for construction and installation of ten capstans at five locks on the Allegheny river.

PITTSBURGH—McConnell Bronze Casting Co., Smallman and Thirty-second streets, has been incorporated by E. F. McConnell, to manufacture bronze and aluminum castings.

PITTSBURGH—Vang Construction Co., Pittsburgh, has submitted bid of $1,702,696 for construction of locks 2 and 3 on the Allegheny river, the lowest of more than 200 contractors. Locks will require several hundred tons of reinforcing steel, 1315 tons of structural steel and steel castings and 3000 feet of steel and cast pipe.

Ohio

BEDFORD, O.—R. W. Kaltenbach Corp. has been awarded a contract for improvements to electric cranes in building 18, Philadelphia, bureau of yards and docks, at $9375.

CINCINNATI — Cincinnati Union Terminal Yards, H. A. Waite chief engineer, is planning a yard service building 42 x 492 feet in its terminal development.

CLEVELAND—Heating and ventilating equipment for the underground exhibition hall has been awarded to Jacob Halter Sons Co., 2604 Walton avenue, at $104,174.

CLEVELAND—William R. Powers, Rose building, architect, is planning a factory building to be erected at 5100 Harvard avenue, 74 x 140 feet, steel columns and sash. Plans are being revised after rejection of first bids.

CLEVELAND—Plans are nearly ready and bids will be asked soon on a high level bridge on Brookpark road across Rocky river valley, reinforced concrete, 1900 feet long, 40-feet roadway, costing about $400,000. J. O. McWilliams, Western Reserve building, Cleveland, is division highway engineer.

COLUMBUS, O.—Engineers are completing plans for a sewage disposal plant to cost about $3,500,000.

MARTINS FERRY, O.—James H. Beans Foundry Co. is renovating its plant after a shutdown, preparatory to resuming production, several orders being about to be closed.

SHELBY, O.—Plans for additions and alterations to the municipal light plant to cost $85,000 are nearly completed by Froelich & Emery, Toledo Trust building, Toledo, O.

WARREN, O.—Warren Tool & Forge Co. has been sold to its bondholders

protective committee and operations will be continued in charge of C. L. Schoonover, manager.

Michigan

DETROIT—Wilcox-Rich Corp., subsidiary of Eaton Mfg. Co., has added to its line a new valve seat ring recently developed for aircraft use and adapted to automotive construction.

DETROIT — American Record-o-Graph Co. has been incorporated with 75,000 shares no par value, to manufacture recording and reproducing equipment, by A. H. Wyatt, Tuller hotel, Detroit.

DETROIT—United States engineers will take bids until Oct. 26 for dredging 1,355,000 cubic yards of material from Livingstone channel in Detroit river. Blanck & Gargaro, Detroit, have submitted the lowest bid for dredging Fighting Island channel in Detroit river.

JACKSON, MICH.—Reynolds Spring Co., Charles G. Munn president, has bought the inventory, goodwill, dies, tools and fixtures of the Dura Co., Toledo, O., necessary for production of duraware, a specialty of the latter company.

SAULT STE. MARIE, MICH.—Edison Sault Electric Co. has been incorporated with 60,000 shares no par value to operate and maintain electric light and power systems, electric transmission systems and power plants.

Indiana

GARY, IND.—Walter Bates Co. Inc. has been incorporated with 100 shares no par value to manufacture a new type of steel grating and flooring, by Walter Bates, 141 West Forty-sixth street, and brothers. Offices have been established at 333 North Michigan boulevard, Chicago. Manufacture for the present is by a fabricating steel company. A plant may be established later by the company.

Illinois

CHICAGO—American Blade Co., 1708 Montrose street, has been incorporated with 10,000 shares no par value to manufacture razor blades, by Helmut E. Soyke, 1706 Montrose street.

CHICAGO—Colorcraft Lamp & Mfg. Co., 1920 South Western avenue, has been incorporated with 2000 shares no par value to manufacture lamps and other illuminating devices, by Fisher, Boyden, Bell, Boyd & Marshall, 134 South LaSalle street.

CHICAGO — Downes Engineering Co., 5510 Broadway, has been incorporated with $5000 capital to manufacture heating appliances, by Downes, Downes & Downes, 29 South LaSalle street.

CHICAGO—Maas Metal Products Corp. 1480 Merchandise Mart, has been incorporated to manufacture stainless steel, brass and bronze products, steel and copper alloys, by James H. Hicks and associates.

CHICAGO—American Copper Co., 31 North State street, has been incorporated with 10,000 shares no par value to manufacture aluminum, brass, bronze and white metal alloys, by Hicks, Pennington Corp., 1480 Merchandise Mart building.

CHICAGO—Fuel Saver Inc. has been incorporated with 400 shares no par value to manufacture fuel-saving devices for cooking and heating equipment, by Fred H. Rettke, 1467 Elston avenue.

CHICAGO—Root-Davis Radio & Television Corp., 935 West Roosevelt road, has been incorporated with $10,000 capital to manufacture electrical radio and television equipment, by George C. Adams, room 202, 35 South Dearborn street.

CHICAGO—Dieterich Steel Cabinet Corp., 69 West Washington street, has been incorporatd with $5000 capital to manufacture steel cabinets and similar articles, by Richard E. Dieterich, McNab, Holmes & Long, 69 West Washington street, are correspondents.

CHICAGO—Iron & Steel Products Inc., room 653 Railway Exchange building, has purchased for dismantling the blast furnace plant of the Youngstown Sheet & Tube Co. at Mayville, Wis., consisting of two stacks, nine stoves, five blowing engines, a boiler plant of twelve boilers, locomotives, cars and other equipment.

QUINCY, ILL.—Construction of a barge terminal on the Mississippi river here is planned by the Quincy Freight bureau and the Association of Commerce. About $100,000 is involved. Plans by the Missouri Bridge & Iron Co., St. Louis, have been tentatively adopted. A Reconstruction Finance Corp. loan will be sought, a private corporation being formed. The project is described as self-liquidating.

SAVANNA, ILL. — Savanna-Sabula Bridge Co. has financed its bridge across the Mississippi river to Sabula, Iowa, by a Reconstruction Finance Corp. loan and will ask for bids soon. Equipment and tools will total about $4000.

WILMETTE, ILL.—Electric Coal Mining Equipment Co. has been incorporated with $25,000 preferred stock and $10,000 common, to manufacture machinery and equipment, by R. G. Reed, box 724, Danville, Ill.

Southern States

MONTGOMERY, ALA.—Bids will be received until Nov. 10 by constructing quartermaster, Marshall field, for construction of 35 field officers' quarters and 20 company officers' quarters.

KEY WEST, FLA.—Bids will be received until Nov. 8 by superintendent of lighthouses, Key West, for construction of point metal work for two iron towers for Punta Rosa range lights.

PAHOKEE, FLA.—An election is being planned to provide financing for a waterworks system, including pipe, treating plant and elevated tank. L. L. Stuckey is mayor.

TALLAHASSEE, FLA.—Foundry of the R. O. Collins Iron Works has been severely damaged by fire with loss of about $7000.

BALTIMORE—Bids will be received until Nov. 18 for United States appraisers' store building, except elevator plant. Total cost about $1,000,000, including site costing $130,000.

HUNTINGTON, W. VA. — United States engineers have opened bids on valves for lock No. 21 on the Ohio river.

NORFOLK, VA.—Virginia Railway has awarded a contract to Norfolk Dredging Co., Norfolk, at $40,000, for dredging part of its south approach and coal slips at Sewalls Point, Norfolk.

TAZEWELL, VA.—Jewell Ridge Coal Corp. plans erection of a hydroelectirc plant and dam on Dismal river in Buchanan county, to cost about $125,000.

Kansas

KANSAS CITY, KANS.—Plans are being prepared for a steel bridge over the Kaw river, to cost $500,000. Sverdrey & Parcel, Railway Exchange building, Kansas City, Mo., are engineers.

Colorado

PUEBLO, COLO.—Reconstruction of the rail mill at the Minnequa plant of the Colorado Fuel & Iron Co probably will be completed by Nov. 1. Heavier rail sections will be rolled.

Idaho

BURKE, IDAHO—The generator plant of the Federal Mining & Smelting Corp. at Upper Burke has been destroyed by fire with a loss of nearly $10,000. The plant also supplied power to the Morning mines at Mullan.

Pacific Coast

LOS ANGELES—Expansion and betterments by the Southern California Edison Co. will cost $11,000,000 in the year to come and the Southern California Telephone Co. about $10,000,000.

LOS ANGELES—Santa Fe, Southern Pacific and Union Pacific railroads have practically reached an agreement on the proposed union station, estimated to cost $10,000,000, to be built as soon as possible.

LOS ANGELES—Assistance by the Reconstruction Finance Corp. to the amount of $40,000,000 has hastened preparation for starting work on the development of a water supply for Los Angeles district by the metropolitan water district of Southern California, which will cost a total of about $220,-

000,000. Distribution lines and aqueducts will total 239 miles.

SOUTH SAN FRANCISCO, CALIF.—American Brake Shoe & Foundry Co. has bought five acres near Linden avenue and plans construction of a plant next year, to cost about $50,000.

NEWPORT, WASH.—A bond issue of $54,000 has been authorized by voters for purchase of the present waterworks system, formerly owned by the Foshay interests, or to construct a new plant. The city has offered $30,000 for the present system.

PUGET SOUND, WASH.—Bids will be opened in Washington by the bureau of supplies and accounts, navy department, Oct. 25 for furnishing the navy yard here with machine tools, water meters, bolts, nuts and other supplies.

SEATTLE—Mineral Operating Syndicates Inc. has been incorporated with $10,000 capital, by J. C. Allen, 719 Second avenue building.

SEATTLE—Automatic Box Machine Co. has been incorporated with $75,000 capital to manufacture automatic box-making machinery, by F. M. McGrath and associates, care of Trefethen & Porterfield, attorneys, Colman building, Seattle.

YAKIMA, WASH.—Weddle Bar Mining Co. has been incorporated with $6000 capital to engage in metalliferous mining, by W. R. Crawford and associates.

Dominion of Canada

VANCOUVER, B. C.—A report on the cost of a municipal steam-electric plant for street lighting is being prepared by C. H. Fletcher, city electrician, and Charles Brakenridge, city engineer.

WINNIPEG, MAN.—A contract for supplying 90,000 automobile plates for 1933 for the province of Manitoba has been awarded the General Steel Wares Ltd., Winnipeg.

CHATHAM, ONT.—T. M. S. Kingston, chief engineer, has completed a survey of the city's waterworks system and has recommended various additions and changes to bring it up to date.

NIAGARA FALLS, ONT.—Niagara Searchlight Co., Niagara Falls, N. Y., will establish a Canadian branch here as soon as a plant can be obtained. Max Eaton is president. The move is hastened by the new Canadian tariff provisions.

TORONTO, ONT.—Canada Wire & Cable Co. has made arrangements to manufacture and sell in Canada the products of the Mueller Brass Co., Port Huron, Mich., including brass fittings and copper pipe. Manufacture will begin as soon as machinery can be installed.

MONTREAL, QUE. — Canadian Westinghouse Co., Hamilton, Ont., has been given a contract by the city of Montreal to supply equipment for the lower level pumping station of the waterworks system, at cost of about $739,000.

New Trade Publications

EXTENSOMETER — Baldwin-Southwark Corp., Southwark division, Philadelphia, has issued a bulletin, No. 40, on its scratch extensometer, with illustrations showing its application.

HELMETS—W. W. Sly Mfg. Co., Cleveland, has issued a leaflet showing application and use of its helmet to supply pure air to workers in sandblast rooms.

HOIST MOTORS — General Electric Co., Schenectady, N. Y., in bulletin No. 1366 describes its small alternating current totally enclosed hoist motors, with descriptions and illustrations.

ARC WELDING—Plate No. 37 in its series on arc welding of tier buildings has been issued by the Lincoln Electric Co., Cleveland. It covers free-end connections and beam to column webs, with illustrative diagrams.

INDUSTRIAL SCALES — Kron Co., Bridgeport, Conn., is distributing a bulletin describing its redesigned line of automatic industrial scales. Included are dial track scales, portable pan, portable platform, dormant platform, bench, hopper, crane and pitless suspension types.

CARBON BRUSHES — Boxill-Bruel Carbon Co., Columbia Park, O., has issued Catalog No. 13 dealing specifically with carbon brushes for single phase and other fractional horsepower motors.

CRUSHERS—Bulletin No. 111 by the Traylor Engineering & Mfg. Co., Allentown, Pa., presents its gyratory crusher, with illustrations and descriptive matter. A table of sizes and capacities is included.

ENGINEERING ACHIEVEMENTS—No. 10 of its series on epoch-making construction by the Wellman Engineering Co., Cleveland, is devoted to the open-hearth furnace and unloading machinery.

LUBRICATION — The September issue of its magazine on lubrication by the Texas Co., New York, is devoted to problems of lubrication in the gas engine. It treats of cylinder lubrication and cooling.

PRECISION BORER—R. Y. Ferner Co., Washington, representative of the Societe Genevoise, Geneva, Switzerland, is distributing a circular on its precision borer, with motor mounted vertically on one side direct connected to the vertical drive shaft. Accessories are also shown.

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Steam Drop Forge Hammers
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Rolling Mill Machinery
Cement Plant Machinery
Dock Handling Equipment
Coke Oven Equipment

275 of 100 Tons Capacity and over

LADLE AND STANDARD CRANES

59		100 tons
2	WORM DRIVEN Ladle,	100 tons
2		115 tons
6	WORM DRIVEN Ladle,	125 tons
45		125 tons
30		150 tons
3	WORM DRIVEN Ladle,	150 tons
6	WORM DRIVEN Ladle,	160 tons
2	WORM DRIVEN Ladle,	165 tons
7	WORM DRIVEN Ladle,	175 tons
27		175 tons
3	WORM DRIVEN Ladle,	200 tons
4		200 tons
5		225 tons
1		250 tons
3	WORM DRIVEN Ladle,	250 tons
3	WORM DRIVEN Ladle,	275 tons
1		275 tons
1		300 tons
3		430 tons

STRIPPING CRANES

8		100 tons
1		125 tons
22		150 tons
19		200 tons
1	Single Ram,	320 tons

COMBINATION CHARGERS AND STRIPPERS

3		100 tons
1		125 tons
3		150 tons
4		200 tons

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